Evaluating the Impact of University Teaching on Approaches to Learning of Two Groups of First-Year Students in the Hong Kong Polytechnic University

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Declaration

I declare that this thesis represents my own work, except where due acknowledgement is made, and that it has not been previously submitted to any other institution for a degree, diploma or other qualification.
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Abstract

Teachers in universities are always faced with the question of how to improve the quality of student learning. The aim of this study was to evaluate contextual influences on student learning, and to show how teachers and departments might set up the learning situation so that it may promote students' deep learning. Teaching needs to take into account the different approaches to learning that students may adopt.

The study assessed the impact of university teaching on the 'approaches to learning' taken by two groups of students from two different departments in the Hong Kong Polytechnic University. The Study Process Questionnaire by Biggs (1992) was used to evaluate students' approaches to learning at two different points in their studies, viz. the beginning of their first and second year, respectively in 2000 and 2001. Twenty-eight students and thirteen teachers were interviewed to discover the reasons for the students' adoption of their particular learning approaches.

Quantitative data showed that the 'surface' approach score of one group of students decreased significantly after one year, and interview analysis revealed that active student-centred teaching was the main reason for this change. The quality of teaching in the department was strongly related to the student-centred conception of teaching held by most of the teachers. Their approach was to motivate students and engage them in their learning with the aim of changing their students' conception of learning.

The concept of the 'active classroom' served as a framework for teachers to consider in deciding on their teaching process, with the aim of promoting the quality of student learning. The task for staff developers working with university teachers is to increase their awareness of learning as a process in which students actively construct their own knowledge and understanding, while teaching is to provide the context for students in which learning can take place that will achieve the desired learning outcomes.
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Chapter 1: Introduction

1.1 The context of student learning

The central theme of this study is the improvement of the quality of student learning through the understanding of the ways in which university students experience their learning.

The study will attempt to establish links between students’ approaches to learning and the contextual variables of their learning and teaching environments. The study investigates whether there is a change in students’ approaches to learning as they progress through their courses of study, and the reasons for any change or the lack of change.

Data were collected on student approaches to learning at two points: initial entry to their courses and the beginning of their second year of those same courses. The study is thus a longitudinal one, which allows valid inferences to be drawn about the effect of a course of instruction on student approaches to learning.

It is hoped that assessing and analysing students’ learning approaches and the direction of any change will allow feedback to be provided to departments, course teams, and teachers about how they are affecting the way their students approach learning and thereby assist them to work towards continued improvement and enhancement of learning and teaching.
1.1.1 Approaches to learning

The phrase 'approaches to learning' refers to the process adopted prior to the outcome of learning, which is the sense in which it is used originally by Marton and Saljo (1976a,b) in their identification of surface and deep approaches in case studies of tertiary students. The phrase 'approaches to learning' is also used to refer to a predisposition to adopt particular processes, which is what is meant when students are asked by questionnaire how they usually go about learning (Biggs, 1987a, b).

With either meaning, an approach to learning has two components: how you approach a task depends on why you want to approach it in the first place. From the student's point of view there is thus a motivational question and a question of strategy:

Motive: Why am I engaging in learning?

Strategy: How, in that case, will I go about learning?

This combination of motive and strategy is called an approach to learning.

The relevant research on student learning in higher education in the past 20 years describes students as approaching their learning in two qualitatively different ways (Biggs, 1987a, b; Ramsden, 1992; Marton et al., 1997). In one approach (the deep approach), students aim to understand ideas and seek meaning, with students having an intrinsic interest in the task. In the other approach (the surface approach), students see tasks as external impositions, with students being instrumentally motivated and seeking to meet the demands of the task with minimum effort.

The model of the two contrasting student approaches to learning is a version of a
'constructivist' theory of learning, according to which the student is the one who constructs meaning, not the teacher who may be said to impart knowledge or information. This apparently simple view has important implications for teaching at the tertiary level, as the teacher’s role is then the construction of the conditions most conducive to quality learning, which includes more than just lecturing effectively. Teaching needs to take into account the different approaches to learning that students may adopt. Two such approaches, ‘surface’ and ‘deep’, have been distinguished. Students typically display a bias towards one of these two approaches; however, these approaches are also sensitive to teaching contexts. This point is important as it becomes the thrust for evaluating and improving teaching, and for staff development.

Many studies have shown that the outcomes of students' learning are associated with the approaches they use (for example, Biggs, 1989; Gibbs, 1992; Marton & Saljo, 1997). What students learn is indeed closely associated with how they go about learning it. It does not seem to matter whether the approaches are measured by means of questionnaires or interviews, and/or whether the outcomes are defined in terms of grades or some qualitative measure of learning (Gibbs, 1992).

Research reviews also provide evidence that the differences in approaches adopted by students are related to the differences in the learning situation experienced by them. A surface approach is more likely if students lack interest or if the teaching context encourages that approach through reproductive methods of assessment, formal teaching, a focus on transmitting information, or an excessive workload.

This study will argue that if teachers and departments want to improve student
learning, it is very important that they know and understand how students learn. They need to assess students’ approaches to learning and to set up a situation that leads students to adopt or change to those learning approaches that produce the most appropriate and effective outcomes.

1.2 Background to the study

1.2.1 Increasing concern for quality of learning and teaching in higher education

The quality of learning and teaching in tertiary education has long been neglected and considered less valuable than research. However, with the rapid expansion in tertiary education in the past decade, coupled with the rising emphasis on accountability, quality of learning and teaching has moved to centre stage worldwide, particularly in the United Kingdom and Australia and also in Hong Kong (Biggs, 1993a; Barnett, 1994; Young, 1996).

In Hong Kong, the Education Commission Report No. 3 (1988) remarked that “the overall educational standards of Hong Kong’s tertiary students are worse than before” (p. 23). Furthermore, the conclusion that “the provision of high quality teaching must be the first function of every institution” appeared in the report of a comprehensive review of higher education in Hong Kong (University Grants Committee, 1996, p. 167). In 1996 the University Grants Committee (UGC) for the first time carried out a ‘Teaching and Learning Quality Process Review’ in all UGC-funded universities in Hong Kong. At the same time, new ‘Teaching Development Grants’ were provided in the 1995-1998 triennium by the UGC to support institutions in improving learning
The ‘quality movement’ has led to unprecedented and diverse efforts in higher education to improve the quality of teaching and learning. Some educationalists have conceptualized two contrasting approaches: Quality ‘As’ (Assurance, Accountability, Audit and Assessment), which are quality-control mechanisms; and Quality ‘Es’ (Enhancement, Empowerment, Enthusiasm and Expertise) which are strategies for increasing quality (Elton, 1992; Kember, 1997a). Common mechanisms and procedures under the Quality ‘As’ umbrella include but are not limited to programme accreditation; performance reviews at the institutional level conducted by external authority bodies; or performance reviews at the departmental level carried out internally by institutional management, teaching evaluation and staff appraisal. Quality ‘Es’ methods encompass a wide variety of staff development initiatives, such as workshops, courses, and educational development projects supported by grants, and may also include awards to outstanding teachers, promoting excellent teachers.

Another major change that has taken place in higher education in recent years alongside the requirement for quality in teaching and learning is the rapid expansion of higher education.

1.2.2 Quality vs. quantity

Hong Kong’s higher education system has undergone a period of dramatic expansion in the past ten years. In 1989/90 less than 9% of the relevant age group were able to receive higher education. In 1989 the government decided to expand the tertiary sector substantially. The government wanted to double the number of first-year
first-degree places to 18% of the relevant age group by 1994/95 – compared with 9% in 1989/90, and only 2% in the 1970s (University Grants Committee, 1996). Further, in the year 2000 Policy Address delivered by the Chief Executive of the Hong Kong Special Administrative Region of China (HKSAR), the government made clear its plan to increase the participation rate in higher education to 60% of the relevant age group within ten years.

This significant expansion in higher education is to a large extent due to the realization by the Hong Kong Government that the economy needs to shift from an emphasis on manufacturing and servicing to a knowledge-based economy, a shift that has been forced onto Hong Kong by the move of its manufacturing industry to low-wage Mainland China, due to Hong Kong wages having becoming too high to allow exports to remain competitive.

While manufacturing and servicing companies might need to display creativity and entrepreneurship only at the upper echelons, a successful knowledge-based enterprise needs such qualities to be more widely displayed, and with a broader horizontal distribution. Shifting from manufacturing and servicing to a knowledge-based economy implies that greater numbers need to enter higher education so that Hong Kong has a sufficiently well-trained workforce.

In the past, those who managed to secure a place in higher education were elite students capable of advanced learning irrespective of the quality of teaching provided. With the proportion of university students in Hong Kong having increased from 5% to more than 20% of the relevant age group, and predicted to increase to 60% of the
relevant age group in the next ten years, tertiary teachers are faced with many new challenges since the new population of students includes a larger proportion that is dependent on teachers for guidance in academic learning.

Mass education, plus the recent change to a credit-based system in Hong Kong, has resulted in increased class sizes. Some core courses may have additional pressures placed on them caused by budget cuts in higher education due to the current recession, pressures that will become more serious for every higher institution in the future. Such factors present tertiary teachers with new teaching challenges and make the attainment of quality in teaching and learning more difficult. There is a general view that ‘more means worse’, which raises concerns about the quality of teaching and learning.

1.2.2.1 Quality and educational evaluation

Barnett (1992) suggests any measuring quality and evaluation in higher education must be based on two important considerations: one, that the central activity of higher education is that of maximizing the students’ educational development; and two, that it is the continuing improvement to maximize student learning and development that remains the primary goal of universities and should be the focus of any concern over quality in higher education and its measurement.

Any measurement of quality and evaluation study in higher education that falls short of the centrality of students’ experience is inadequate; it fails to provide information about how students have found the experience and how much they are learning and
progressing throughout their university career.

Scriven (1973) emphasized that evaluation has a single goal, namely to determine the worth or merit of whatever is being evaluated. He made the important distinction that the goal of evaluation is to provide answers to the significant evaluative questions posed, whereas evaluation roles refer to the ways in which those answers are used.

Most educators agreed that evaluation can serve either a formative purpose (such as helping to improve a Physics programme) or a summative purpose (such as deciding whether that Physics programme should be continued).

There are a number of significant constraints on the educational evaluation no matter how skillfully and sensitively the evaluation processes are managed. Firstly, any successes, issues or problems identified are post-facts. The information is historic and whilst it may benefit future students, it is of little help for current students with poor learning experience (West-Burnham, 1994).

Secondly, there are a variety of stakeholders in any educational organization, including students, teaching and non-teaching staff, employers, government and its funding agencies, accreditors, validators, auditors, and assessors (Burrows and Harvey, 1992). Each of these stakeholders has a different view of quality, influenced by his/her own interest in higher education. Aspinwall et al. (1992) summarize the problem of evaluation in terms of individual stakeholder in an educational organization:
It cannot be assumed that all members of an educational organisation... share a common view about purpose, priorities or practice; and if they do not, their responses are likely to be coloured by their perceptions of the likely impact of the evaluation on their interests.

(Aspinwall et. al., p. 194)

Although there are significant weaknesses in educational evaluation, Nixon (1992) argues that evaluation is about understanding, developing insights and encouraging reflection. It serves as a central element in professional learning and an important element in the heuristic process of school improvement.

It is against this background that this study seeks to evaluate the contextual influence on students' approaches to learning and to explore what staff developers can do to help academic staff change those aspects of their teaching contexts which will most likely lead to improved student learning.

1.2.3 Involvement in teaching and learning projects

The predominant reason for this study is the author's interest and involvement in projects on teaching and learning with academic staff in a number of departments in the Hong Kong Polytechnic University (PolyU) since 1996.

The initial project which led to this interest was entitled 'Video-Interview Project' (Jones et al., 1999), conducted by the Educational Development Centre of the Polytechnic University, of which the author was a project member. The project aimed to produce video clips for workshops to stimulate reflection by teachers. The project revealed that many students find university study very different from their secondary
school studies, and that therefore a very different study style had to be adopted to make their learning a successful experience.

Further interviews with selected PolyU academic staff also pointed to student problems detrimental to university study, including a lack of background knowledge, basic learning skills as well as higher-level skills, such as time management skills, problem-solving skills and independent learning skills.

Academic staff suggested that many new students at PolyU still adopted the attitudes and learning styles of their secondary school days. Some staff complained that the Hong Kong Government had expanded the number of students enrolled at the university but had not reformed the primary and secondary school system first. In fact, many students joining the university were brought up in the traditional style of education where

(i) teachers dominate student learning, providing everything for them;
(ii) students had very little chance to manage their own learning;
(iii) the pace of work was imposed in detail from outside; and
(iv) learning was highly examination-oriented.

In other words, students were under-prepared for the university style of learning and hence found themselves not learning effectively. Many academic staff also highlighted in the interviews that effective learning at the early stage of university education was an important prerequisite for subsequent years of successful study.

The background knowledge accumulated in the above study on student learning led to
the creation of a base upon which to build in the second project, entitled ‘Effective Learner Programme’, which aimed to provide a learning skills programme for first-year students. The project aimed to change students’ conceptions of learning and lead them to becoming deep learners. The project was funded by a Learning and Teaching Development Grant of the PolyU. The author was the principal investigator; the other project members included a student councillor from the Student Affairs Office and three academic staff from three different departments. The programme consisted of five workshops for first-year students and was conducted in the first semesters of the 1997-98 and 1998-99 academic years for around two hundred students from four departments in the PolyU.

The project lasted for two years and the feedback from students was positive (Tang et al., 1999; Tang, 2000). The students found that most of the workshops were useful but they also revealed that

(i) they already knew many of the study skills in the workshops;

(ii) the workshops encouraged them to use a deep approach in their learning but some teaching and assessment encouraged them to use a surface approach; and

(iii) the students preferred workshops, which were conducted by their own subject teachers because they perceived that the content was more relevant to their course.

The overall evaluation from questionnaires and interviews revealed that the impact of the ‘Effective Learner Programme’ on students’ learning quality was minimal, predominantly due to a substantial number of consecutively intervening events, which
took precedence over this programme. The student interviews revealed that factors such as the students' normal courses and their teaching contexts, assessment methods and course design, seemed to have a much bigger impact than the programme itself. Our conclusion was that if the teachers were not aware of how their teaching affected student learning, it was very difficult to change students through an isolated programme. The evaluation recommended that a more ideal form of the programme would be to embed it in the students' normal teaching and learning environment. Additionally, it was suggested that the programme would be more effective if it was integrated with the students' normal curriculum, which would provide the necessary support, interaction and feedback.

The evaluation of the 'Effective Learner Programme' led the author to undertake this study, which has been conducted in a natural environment without any intervention in contextual factors such as teaching mode, assessment methods and course design. This study is intended to provide guidance for staff developers and academic staff; a more complete understanding of how students approach their learning; and a guide to the impact of teaching and the contextual factors obtaining in the departments of the PolyU.

1.3 The purpose of the study

The purpose of this study is to examine the issue of different approaches to learning and how these relate to the teaching and learning environment, specifically to assess and evaluate the impact of teaching on the approaches to learning taken by two groups of students from two different departments in the PolyU. In detail, the study aims to
(i) provide a comprehensive understanding of how the PolyU students learn and develop their approaches to learning during their course of study;

(ii) develop an understanding of the impact of university teaching on the approaches to learning adopted by the PolyU students; and

(iii) make recommendations which can be used by the university to improve the quality of student learning.

1.3.1 The research questions

In order to achieve the above aims the study puts forward the following research questions:

(i) What are the approaches to learning adopted by two groups of PolyU first-year students from two departments?

(ii) Do students change their approaches to learning as they progress through their course of study?

(iii) What factors in the learning context provided by the departments are related to students' approaches to learning?

(iv) Are the approaches to learning adopted by students effective predictors of their academic performance as measured by Grade Point Average (GPA) and their degree of 'satisfaction with university experience'?

The Study Process Questionnaire (SPQ) Hong Kong version by Biggs (1992) was utilized for the research as it has been used extensively in Hong Kong; its cultural relevance has been researched; and Hong Kong norms are available for it. The SPQ was administered to two groups of students, numbering a total of 57 students, at two
different points in their course, in September 2000 and October 2001.

Another concern of the research was to understand the reasons for adopting the particular approaches to learning. Consequently, twenty-eight students and thirteen teachers were interviewed between January and June 2002.

Due to the need to limit the scope of the study and the practical problems involved in collecting longitudinal data on individual students over a predetermined period of time, the study only observed the changes in first-year students in two departments, whose first year in university should be considered one of the most critical years in their personal development and their experience in that year of particular importance (Gibbs, 1992).

The two groups of students were chosen from two different departments in the PolyU. One group was taking a degree course in the Department of Hotel & Tourism Management. The course consists of many practical subjects, is vocationally oriented, and has been ranked in the top five in the ‘Popularity list in the PolyU’ in the last three years from 2000-2002 (Admission Statistics 2001-2, The Hong Kong PolyU, 2002). The ‘Popularity list in the PolyU’ is determined by the successful intakes divided by the number of applicants. The other group was taking a degree course in the Department of Applied Physics. This course consists of a number of theoretical subjects and is not designed to train students for any particular vocation. The staff teaching this course have complained that it cannot attract good academic students. There are many differences between the two courses and the two different learning environments.
1.4 The Hong Kong Polytechnic University (PolyU)

The PolyU (formerly the Hong Kong Polytechnic) opened in 1972. In the early 1970s, the range of courses offered was focused mainly on engineering, commerce and management, mathematics and science, nautical studies and textiles. Presently PolyU has widened the scope of disciplines to cover design, computing, language, social work, medical and health care, and hospitality management and tourism. Over the years the PolyU has progressed from an institution of eight departments to one with twenty-nine academic departments and centres in six faculties. Today it is the largest university in Hong Kong in terms of student population, with 8,124 undergraduate students and 2,939 research students. There are 1,003 academic staff offering more than 120 programmes in a wide array of academic disciplines, at levels ranging from higher diploma and bachelor's degrees through to master's and doctoral degrees (The Hong Kong PolyU in Figures 2001/02).

1.4.1 Teaching and assessment practices in the PolyU

The PolyU undergraduate courses are mainly taught in one-semester modules, each semester lasting fourteen weeks. There are two semesters in an academic year, which begins each year in early September and ends at the end of May in the next year.

The course grades awarded at the end of the module are arrived at on the basis of a formal examination or, more usually, a combination of exams and assignments and tutorial practical performance.
PolyU has adopted both the American and British systems on reporting assessments. A Grade Point Average (GPA) is provided to students, which is the academic result based on a student's total subject scores for each semester. On graduation, students are awarded a pass or honours degree based on the British system. The undergraduate courses mostly follow the British system, being of three years length.

1.5 Summary

In common with many other parts of the world, there has been an increased concern about the quality of higher education institutions in Hong Kong. The massive expansion of the universities means that there is a much wider range of student ability at intake and that the attainment of quality in teaching and learning has become more difficult. Effective learning can no longer be taken for granted, as it might have been ten or twenty years ago in a more elitist university system. It is a concern with the quality of learning and teaching which provides the background for this study.

The purpose of the study is to understand and evaluate contextual factors on the quality of student learning. It aims to make recommendations which can be used by the university to continue improvements in student learning, which in turn must be the main focus in higher education.
Chapter 2: Literature Review

This study is conceptualized within the framework of student ‘approaches to learning’, which is a version of ‘constructivist’ theories of learning. This chapter will start with a brief introduction of constructivist theories of learning and then review the growing body of literature associated with approaches to studying as researched by: the Gothenburg group in Sweden (Marton & Saljo, 1976a,b; Saljo, 1979), Pask (Pask, 1976a,b), Biggs (Biggs, 1978; 1979 and 1989), and the Lancaster group (Ramsden & Entwistle, 1981; Ramsden, 1997). It then examines the instruments for measuring students’ approaches to learning, which leads to the discussion of yet another approach to learning and the ‘paradox’ of Asian learners. It will then move to the central issue related to the research design of this study, which is the contextual influences on students’ learning approaches, with special focus on teaching and the conception of teaching. The chapter will end with recent research evidence on ways to improve the quality of student learning in higher education.

2.1 A constructivist theory of learning

The essential notion of constructivism is that learning is an active process by which learners construct their own understanding. A constructivist view of knowledge holds that knowledge is something that is constructed by students, and not ‘transmitted’ by teachers. Such a view is inherent in Shuell’s (1986) conclusion about cognitive psychology’s contribution to education:
If students are to learn desired outcomes in a reasonably effective manner, then the teacher’s fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes.... It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does.

(Shuell, 1986, p. 429)

According to Biggs and Watkins (1993, p. 8), constructivism is not a theory so much as a perspective on learning, emphasizing that

(i) people actively construct knowledge for themselves;

(ii) knowledge is based on categories derived from social interaction not observation; and

(iii) people determine their own knowledge.

2.1.1 Social constructivism

Social constructivism emphasizes the role of social interaction and participation in the construction of knowledge and the development of higher mental functions. Vygotsky is generally recognized as the leading figure in social constructivism.

A central concept in Vygotsky’s theory about development in any domain is the zone of proximal development, defined as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). This conceptualization suggests that there are certain critical areas in the process of development where adult guidance or collaborative learning plays an important role.
The guidance, according to social constructivists, is not the usual dominating teacher talk but should be through ‘instructional conversation’ which means learners conversing and interacting with more capable personnel in situations like assisted discovery, scaffolding, reciprocal teaching, collaborated group problem solving etc. (Woolfolk, 1995). Essentially, students are expected to grapple with the problems themselves. Through this socially-regulated development, the learner internalizes concepts, values and modes of thought, and will proceed to stages when the learner becomes mature in relation to a specific aspect of the problem and can continue with self-regulated development.

In their research on the social construction of knowledge Brown, Collins & Duguid, (1989) emphasized the importance and roles of student interactions in promoting learning experience. As students interact, the collaborative processes of articulation, conflict and meaning negotiation provide scaffolding effects to foster students’ deep understanding.

2.1.2 Impact of constructivism on education

Important implications for teaching and learning arise from the constructivist theoretical view about how knowledge is constructed. The idea that learners are actively constructing personal understanding instead of receiving transferred knowledge suggests that the traditional transmission mode of teaching is out of place. It is realized that the success of education depends crucially on how the learner proceeds with their learning. Resnick (1989) has identified three key principles bridging constructivist learning with instruction. These three principles of learning include: (i) prior knowledge – learning is related what students already know; (ii)
strategy – learning is related to learner strategy: (iii) social contexts – learning is socially constructed.

It is recognized that approaches which are learner-centred, exploratory and interactive are more conducive to vigorous construction of meaning by the students themselves. This understanding calls for a shift of focus from transmission of information by the teacher to facilitating student learning. In higher education, the call for this shift has echoed throughout the literature in this decade (Bowden, 1988; Biggs, 1989; Gibbs, 1992; Ramsden, 1992).

The contemporary forum of staff development also shows an obvious constructivist flavour. Besides the basic skills essential for inexperienced teachers, workshops contents typically exhibit heavy emphasis on student-centred approaches on teaching for problem-solving and on encouraging students to take more responsibility for their learning (Kember & Gow, 1992; Biggs, 1993b).

The influence of a social approach to knowledge construction through social interaction is also evident in an increasing call for peer learning, collaborative group learning and situated learning in authentic real situations (Resnick, 1989; Shuell, 1993). Communities of learners (Brown, 1997) and collaborative knowledge building in computer-supported intentional learning environments (Scardamalia & Bereiter, 1994) have been advocated since, as students work together, they acquire the practices of a learning community as they help each other pursue deep understanding.
2.1.2.1 The Hong Kong Context

The great majority of research supporting constructivist approaches mainly comes from research in Western classrooms. Do constructivist approaches work for Hong Kong students and teachers? Traditionally, the Chinese teacher is viewed as a respected figure with all wisdom, and the idea that students should control their own learning might contradict such cultural beliefs. There is also the general belief that Chinese teachers brought up in a system emphasizing didactic teaching might not be accustomed to constructivist instruction.

Recent research by Chan (2001) demonstrated that ordinary classroom teachers can utilize Western constructivist learning strategies effectively in Hong Kong classrooms. Stokes (2001) also showed problem-based learning could be applied at undergraduate level in Hong Kong. Some teachers had difficulties in adapting to the new roles demanded of them when implementing problem-based learning, but those difficulties were created by their conception of teaching rather than by their ethnicity, namely the teacher as dispenser of knowledge as opposed to the teacher as facilitator of learning.

There will be further discussion about how Hong Kong students learn and the paradox of Asian students in Section 2.6 of this chapter.

2.2 Research into approaches to learning

Starting in the mid-1970s, there has been a surge of interest in studying students’ learning in western countries. Contributions have come mainly from three centres of research, namely Marton and his colleagues at Gothenburg University in Sweden,
Biggs at Newcastle University in Australia, and Entwistle and Ramsden at Lancaster University in the United Kingdom.

While there are substantial differences between the aims and results of the research projects, and in the methods used (qualitative vs. quantitative using ‘inventories’) by the researchers at these three universities, their reported results have one thing in common. Studies from the three centres identified two different ways in which students approached learning, referred to as ‘surface’ and ‘deep’ approaches to learning respectively. This conceptual framework of ‘approaches to learning’ has had a major impact on contemporary thinking about learning, teaching and staff development in higher education.

2.2.1 The Gothenburg Group

The Gothenburg research group in Sweden developed a qualitative approach to research, which they called ‘phenomenography’ (Marton, 1981). The aim of this approach was to understand how students perceived the content and process (the ‘what’ and ‘how’) of learning. The underlying rationale was the phenomenological notion that people act according to their interpretation of a situation rather than to ‘objective reality’. The basic principle of the phenomenographic view of learning is that “learning should be seen as a qualitative change in a person’s way of seeing, experiencing, understanding, conceptualizing something in the real world” (Martin & Ramsden, 1987, p. 271). The ways students learn is said to be a function of how they perceive the learning task and the learning environment.
The concept of surface and deep approaches to learning was first used by the Gothenburg researchers. Their research concentrated on the way in which students approached the task of reading substantial academic articles. Students were invited to read the articles at their own pace using their normal approach. After reading the article, the students were interviewed to determine what they had learned, how they had approached the task, and what was their normal behaviour when reading academic articles.

Marton and Saljo (1976a,b) identified two approaches which different students adopted for the task: a deep approach and a surface approach. Students who employed a deep approach searched for the meaning of the article by examining the author's arguments. They were able to distil the main point the author was trying to make, related evidence and arguments to their own knowledge and critically examined the evidence presented for the author's arguments. By contrast, students who employed a surface approach tried to rote learn information they considered important, and rather than seek an understanding of the overall meaning of the article, they attempted to memorize details which they felt might serve to answer later questions.

Svensson (1977) related the propensity to employ either a deep or a surface approach to examination performance. Those classified as using a deep approach passed a far greater proportion of their examinations than those who normally employed a surface approach. Svensson also found that those employing a deep approach tended to study for longer periods as the search for understanding made their work more interesting.
2.2.2 Pask

Another series of experiments was carried out by Pask (1976a, b) and his colleagues at a research institution in Surrey, UK on learning styles and strategies. Pask’s experiments differed from those conducted by the Gothenburg researchers in that students were required to reach a deep level of understanding. In this way Pask attempted to study the strategy which students used in trying to meet this requirement.

Pask distinguished two different strategies, called ‘serialist’ and ‘holist’ respectively, both of which enabled the learner to reach the required level of understanding. The serialist strategy is defined as a logical step by step manner of problem-solving, with an emphasis on individual pieces of information and the sequences connecting them, forming an overall picture of the topic only late in the learning process. The holist strategy is defined as taking a broad perspective, trying to build up an overall picture in the beginning and fitting the details into the picture later on, at the same time using analogies to help understanding.

Pask argued that a learning style was different from a learning strategy, the former being a general tendency to adopt a particular strategy. The learning style underlying a serialist strategy was called ‘operation learning’, while that underlying a holist strategy was called ‘comprehension learning’. According to Pask versatile students are able to adapt their learning strategy to the specified task and show the signs of both learning styles. Less versatile students consistently display one style rather than the other regardless of the learning task. Students who display one style to the exclusion of the other may be inflexible in their learning style.
Learning pathologies associated with each strategy were identified by Pask. A learning pathology associated with an excessive use of the serialist strategy Pask referred to as 'improvidence'. Improvident students are unable to see the way in which elements of knowledge relate to one another to form an integrated whole. These students do not make any use of analogies. The opposite learning pathology was referred to as 'globetrotting', which is an excessive and extreme version of the holist strategy. Students who globetrot jump to conclusions too hastily, drawing conclusions without proper consideration of the evidence. They are overly ready to draw analogies, often irrelevant or inappropriate ones. Pask emphasized the importance of students using both styles of learning in order to reach full understanding.

2.2.3 Biggs

Around the time the Gothenburg group carried out its research, John Biggs at Newcastle University, Australia, investigated the motives and strategies of tertiary students in Australia (1978, 1979, 1987a). Instead of conducting naturalistic experiments with a small sample of students, Biggs sought to develop quantitative inventory-type research tools designed to identify and measure the dimensions underlying study behaviour adopted by students. His work led to the Learning Process Questionnaire (LPQ), designed for use in secondary schools, and the Study Process Questionnaire (SPQ), designed for use with university students. The LPQ and SPQ encapsulate the conception of the work by Marton and Saljo on surface and deep approaches, and the work of Fransson (1977) on intrinsic and extrinsic motivation.
Biggs identifies three approaches to learning, namely ‘surface’, ‘deep’, and ‘achieving’ approaches. All three approaches have elements Biggs calls ‘motive’ and ‘strategy’, and these are intimately related; the relationships are summarized in Table 2.1.

### Table 2.1 Approaches to studying, motives and strategies

<table>
<thead>
<tr>
<th>Approach</th>
<th>Motive</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>Instrumental: to pass without working</td>
<td>Reproductive: rote learn essential</td>
</tr>
<tr>
<td>Deep</td>
<td>Intrinsic: to really understand</td>
<td>Wide reading: link with previous knowledge</td>
</tr>
<tr>
<td>Achieving</td>
<td>Ego-building: to get best grades</td>
<td>Time management: be a “model student”</td>
</tr>
</tbody>
</table>

(Adapted from Biggs, 1987a)

The **surface approach** is based on extrinsic motivation, i.e., the students see university as a means towards some other end, such as obtaining a better job. Students adopting this approach need to balance avoiding failure against working too hard. To meet such an intention, the strategy adopted is reproductive through rote learning. The student focuses on the concrete and literal aspects of the task components, rather than on meaning, and treats the learning tasks as unrelated to each other or to other learning experiences.

The **deep approach** is based on interest in the subject matter of the task. The strategy flowing from that is to maximize understanding so that curiosity is satisfied. A student adopting a deep approach sees the task as interesting and personally involving, focuses on underlying meaning rather than on the literal aspects, and seeks integration.
between components and with other tasks. The student adopting this approach reads widely, discusses with others, and may ‘play’ with the task, theorizing about it and forming hypotheses about how it relates to other known or interesting items.

The *achieving approach* according to Biggs (1987a) is based on a particular form of extrinsic motive, namely the ego-enhancement that comes out of visibly achieving, in particular through high grades. The related strategies refer to organizing time, working space, and syllabus coverage in the most cost-effective way (usually known as ‘study skills’). A student adopting an achieving approach is neat and systemic, and plans ahead, allocating time to tasks in proportion to their grade earning potential.

### 2.2.3.1 The 3P model of teaching and learning

Biggs (1993b, 1999) emphasizes that the motive/strategy model is related to students’ intentions and their perceptions of the learning context, and is therefore only meaningful in context. Biggs adapted a model of teaching and learning proposed by Dunkin and Biddle (1974, cited in Biggs, 1993b) to capture the relationships between the characteristics of the learner and the learning context (presage) on the one hand, and student approaches to a particular learning task (process) and outcomes of learning (product) on the other, in his 3P model of learning, as shown in Figure 2.1.
The 3P model, according to Biggs (1999), does not just show a linear progression from presage to process to product, but instead shows that each component interacts with all other components, forming a system in equilibrium. This 'systemic' aspect generates predictions that are highly relevant to the present study.

Presage factors are of two kinds: (1) student-based, which includes a student's prior knowledge, interest in the topic and abilities, commitment to university, and so on; and (2) teaching context-based, which includes what is intended to be taught and how it will be taught and assessed, the 'climate' of the classroom and the institution itself, and so on.
Factors interact at the 'process' level to determine a student's immediate learning-related activities as approaches to learning. The term 'process' refers to the way in which students actually handle the task, which is determined by their perceptions of the teaching context, their motives and predispositions, and their decisions for immediate action, all of which comprise their approach to the learning task. The term 'product' refers to the learning outcome as determined by many factors, acting in interaction with each other. The general direction of effects is marked by the heavy arrows in Figure 2.1: student and teaching presage factors jointly determine the approach a student uses for a given task, and that in turn determines the outcome. The light arrows connect everything else because all components form a system (Biggs, 1993a).

Biggs (1999) makes explicit the roles surface and deep approaches play in his 3P model:

Surface and deep approaches to learning are not personality traits, as is sometimes thought, but reactions to the teaching environment.... The 3P model depicts the classroom as an interactive system in which student characteristics and the teaching context mutually determine ongoing deep or surface learning activities, which in turn determine the quality of learning outcomes.

(Biggs, 1999, p. 30)

2.2.4 The Lancaster Group

During the 1970s and 1980s, Entwistle and his colleagues at the University of Lancaster used both qualitative and quantitative methods to investigate student learning (Entwistle et al., 1979; Ramsden & Entwistle, 1981; Entwistle & Ramsden,
1983). They created a series of inventories so that a larger group of students could be examined for evidence of approaches to studying and the learning styles hypothesized by Marton and Saljo (1976a,b), Svensson (1977) and Pask (1976a,b). They also took account of the work of Biggs (1978, 1979), which was taking place simultaneously. They called their inventory the 'Approaches to Studying Inventory' (ASI). The ASI has a number of versions and the final version (Ramsden & Entwistle, 1981) consisted of 64 items grouped into 16 sub-scales. The sub-scales are listed in Table 2.2, together with their meaning. The table acts as a useful summary of the concepts and dimensions suggested by the body of research on approaches to learning.

<table>
<thead>
<tr>
<th>Sub-scale</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep Approach</td>
<td>Active questioning in learning</td>
</tr>
<tr>
<td>Interrelating Ideas</td>
<td>Relating to other parts in the course</td>
</tr>
<tr>
<td>Use of Evidence</td>
<td>Relating evidence to conclusions</td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>Interest in learning for learning's sake</td>
</tr>
<tr>
<td>Surface Approach</td>
<td>Preoccupation with memorization</td>
</tr>
<tr>
<td>Syllabus-boundness</td>
<td>Relying on staff to define learning tasks</td>
</tr>
<tr>
<td>Fear of Failure</td>
<td>Pessimism and anxiety about academic outcomes</td>
</tr>
<tr>
<td>Improvidence</td>
<td>Over-cautious reliance on details</td>
</tr>
<tr>
<td>Disorganized Study Methods</td>
<td>Unable to work regularly and effectively</td>
</tr>
<tr>
<td>Negative Attitudes to Studying</td>
<td>Lack of interest and application</td>
</tr>
<tr>
<td>Globetrotting</td>
<td>Over readiness to jump to conclusions</td>
</tr>
<tr>
<td>Achievement Motivation</td>
<td>Competitive and confident</td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>Interest in courses for the qualifications they offer</td>
</tr>
<tr>
<td>Strategic Approach</td>
<td>Awareness of implications of academic demands made by staff</td>
</tr>
<tr>
<td>Comprehension Learning</td>
<td>Readiness to map out subject areas and think divergently</td>
</tr>
<tr>
<td>Operation Learning</td>
<td>Emphasis on facts and logical analysis</td>
</tr>
</tbody>
</table>

(Adapted from Ramsden & Entwistle, 1981, p. 371)

Later studies of the Lancaster group in students' approaches to learning extended to
the factors that affected the adoption of particular approaches by students. In many studies, the Course Experience Questionnaire (Ramsden, 1991; Ramsden & Entwistle, 1981) which measures students’ experiences of learning in terms of teaching, course goals, workload, assessment, and emphasis on independence was correlated with scores in their ‘Approaches to Study Inventory’ and established important understandings about how students learn in relation to their perception of the learning context.

2.3 Conceptions of learning and approaches to learning

The effort to understand learning from the students’ perspectives has led to the study of students’ conceptions of learning, which also originated at Gothenburg University in Sweden. Saljo (1979) interviewed students about what they mean by learning and identified five different conceptions of learning:

(i) Learning as the increase of knowledge
(ii) Learning as memorizing
(iii) Learning as the acquisition of facts, procedures, etc., which can be retained and/or utilized in practice
(iv) Learning as the abstraction of meaning
(v) Learning as an interpretative process aimed at the understanding of reality

In a later study involving adult students in a distance learning course, Marton et al. (1993) obtained the same five conceptions as Saljo plus a new sixth one, called ‘learning as changing as a person’. They also proceeded further in ‘differentiating’ learning by positing that learning appears to be comprised of an acquisition and an application phase.
Research has established important relationships between students' conceptions of learning and learning approaches. Students holding conceptions 1-3 in the above list are found to show bias towards surface approaches while those who seek for meaning and interpretation of reality generally adopt a deep approach (Marton & Saljo, 1976a,b; Van Rossum & Schenk, 1984). Correlations between students' conceptions of learning and their expectations of teaching also indicated a difference between lower-level and higher-level conceptions. Those who hold lower-level conceptions of learning expect a more didactic, closed approach of teaching, where students are supplied with pre-digested materials and are tested on these ‘taught’ materials, while higher-level conceptions are associated with a preference for more open, liberal teaching in which students study independently with the teacher as facilitator (Van Rossum & Taylor, 1987). This finding agrees with Entwistle and Tait (1990), who show that students relying on a surface approach rate the didactic form of teaching highly while those who show a deep orientation favour more challenging and stimulating teaching.

2.4 Relations between learning outcomes and approaches to learning

There were many research results which showed that there is a positive relation between a deep approach to learning and qualitative differences in learning outcomes, especially at task, subject or course level.

In what was probably the first study to reveal a relation between learning approach and outcome, Marton and Saljo (1976a,b) reported variations in descriptions of students' learning in a reading task. Students with poor learning outcome had adopted
a surface approach, while students with high-quality learning outcome were using a
deep approach.

Prosser and Millar (1989) examined learning approaches and learning outcomes
associations in first-year physics students. This study is of particular interest as it
looked at changes in students' conceptions of phenomena concerning Newtonian
mechanics (such as identifying forces in cases of reducing and constant velocity).
Tests of understanding were carried out before and after the course. Prosser and Millar
showed that students who adopted surface approaches to a course of study were less
likely to show high-level conceptions of the particular concepts involved. They also
provide strong evidence of a causal connection between the approach used and the
level of understanding reached. They found that development in conceptions as the
course proceeded was related to the approach used. Students who used deep
approaches were more likely to change their understanding in the direction that
lecturers desired.

Ramsden (1991), in a study of adaptation to higher education in Melbourne, found
that a group of students who were classified as high on deep approaches and low on
surface ones, both at school and at university, also reported conscientious and
well-organized study habits; obtained better school leaving results; and in the first
year of higher education, gained better average grades.

Watkins (1982, 1983) found that surface approach, disorganized study method and
negative attitudes to studying were consistently related to poor academic performance.
Furthermore, he found that students who adopted deep approaches to learning retained
more of the factual material in the text when tested on the knowledge of it several
weeks later.

Approaches to learning and learning outcomes in a cross-cultural perspective were investigated by Watkins (1996). His research involved sixteen studies with a total of 9,841 students from five countries, using a range of learning questionnaires. He found correlations between approaches to learning and academic grades. The trends of the correlations were in the expected direction. The mean correlations obtained from his studies were -0.11, 0.20, and 0.19 with surface, deep and achieving approach, respectively (1996, p. 13). That means that it is predictable that students who adopt deep and achieving approaches to learning will be more successful academically than those who adopt a surface approach.

The research presented above shows that the variation of student learning outcomes is strongly related to the approaches to learning adopted by those students. These relations are supported by a substantial body of research, which provides evidence that students who achieve higher quality outcomes in terms of understanding or academic performance are students who adopt a deep approach. They are more aware of relations between elements of their understanding of a subject and are aware of how that understanding and those relations can be applied in new and abstract contexts.

However, there is evidence contradicting that position or at least calling it into doubt. Provost and Bond (1997), in a study of the approaches to study by 175 Australian psychology students and their academic performance, found that approaches to study were rather poor predictors of academic performance in terms of assessment in grades. Kember et al. (1995) also found no significant correlation between the approaches to
learning and students' academic performance in terms of Grade Point Average (GPA). They concluded that students may have very mixed perceptions about the assessments in different subjects that combined the GPA result. This argument was also supported by Gunstone and White (1981), cited by Trigwell and Prosser (1991a), claiming that much research on student learning showed that quantitative indicators of student achievement were not the same as qualitative indicators of student understanding.

2.4.1 Measuring qualitative differences in learning outcomes using SOLO

Research into qualitative differences in learning outcomes has been greatly assisted by the taxonomy provided in the Structure of the Observed Learning Outcome (SOLO). Biggs and Collis (1982) described five structured levels of learning outcomes, ranging from incompetence to expertise. Level one (incompetence) is applicable to an outcome containing nothing of relevance to the knowledge in question. Level two (uni-structural outcomes) make reference to only one relevant item. Level three (multi-structural outcomes) lists relevant items independently. Level four (relational outcomes) does not necessarily reveal more knowledge than multi-structural outcomes at level three. However, in outcomes of this sort, understanding is integrated and related. Level five (extended abstract) is the most complete level, which includes outcomes that demonstrate the generalizability of the understanding to new contexts. Students with such an understanding are able to draw upon it in new contexts.

Tang and Biggs (1995) asked their B. Ed. students to write letters to a friend their experience of the course, and then analysed those responses using the SOLO
taxonomy. They used this approach at the beginning and end of the course as a means of monitoring conceptual change. The report gave an indication of the portion of students who describe their understanding in a complete or partially complete ways. Trigwell and Prosser (1991a) used the SOLO taxonomy as one means of assessing students' learning outcomes and showed that there is a positive relation between a deep approach to learning and qualitative differences in learning outcome. The higher quality outcomes were associated with a deep approach to learning.

2.5 Instruments for measuring the approaches to learning

Various instruments have been developed to examine student approaches to learning. The two research questionnaires that seem to have been used most extensively for higher education are the Approaches to Studying Inventory (ASI) by Ramsden & Entwistle, (1981) and the Study Process Questionnaire (SPQ) by Biggs (1987b). Both of these questionnaires have been administered to substantial numbers of students in Australia, the United Kingdom and Hong Kong (e.g., Entwistle & Ramsden, 1983; O'Neil & Child, 1984; Harper & Kember, 1986; Biggs, 1987a, 1992).

To support the use of the SPQ, Biggs (1987a) obtained norms for Australian students and Biggs (1992) for Hong Kong students separately for first-year, second-year and higher-year students. Thus a given student's SPQ profile may be compared with that of the academic sub-population and year level to which that student belongs. The SPQ and the associated norms are also helpful for lecturers who would like to know what learning approaches are typically being encouraged in their classes and what in their teaching is likely to encourage desirable or undesirable approaches to learning. Hence

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the SPQ offers useful tools for classroom-based research into the quality of student learning in investigations of particular aspects of theory and practice.

Kember et al. (1997) also advocated the repeated applications of inventories of approaches to learning (SPQ and ASI) as an appropriate technique for the evaluation of education innovations in naturalistic settings. They carried out a survey of 2,143 students enrolled in degree-level courses at one tertiary institution in Hong Kong (Gow & Kember, 1990; Kember & Gow, 1990). Figure 2.2 graphs a representation of the data given in Kember and Gow (1990), showing the mean deep approach scores to learning by year of study. The survey involved students in over a third of the departments and included all three years of study. It can be seen that the deep approach to learning decreases consistently over the course of students’ studies.

![Figure 2.2 Mean SPQ deep approach scores by year of study](From Kember & Gow, 1990, p. 126)

They concluded that any innovation which can show an increase in the use of deep approaches has therefore achieved something quite significant. It even seems to be
some sort of achievement in higher education if deep approach scores do not decline.

However, Kember et al. (1997) voice a word of caution, saying that they would not view deep approach scores as unequivocal indicators of the success of an innovation as innovations are too diverse in their aims and nature. Further, they do not wish to be interpreted as advocating deep approach scores as a universal measure of the quality of a course, something that had been sought by several regulatory bodies.

The results of other surveys of learning approaches by year of study suggest that the findings described above are certainly not unique to the one institution in Hong Kong. Biggs (1987b) used the SPQ for a survey of 2,365 students at ten Australian Colleges of Advanced Education and five universities. University science students showed a general decline in the use of a deep approach as they progressed through their course. For arts students, the mean deep approach scores rose in the second year but dropped for the third year. In a longitudinal study, using the ASI, Watkins and Hattie (1985) found that deep approach scores declined from first to third year. The decline was attributed to increased workloads and perceived lack of employment opportunities.

Researchers have had difficulties in maintaining and (even) increasing deep approach scores in all innovations selected as case studies for a national project devoted to improving the quality of student learning. Gibbs (1992) reported ten case studies funded by the British Council for the National Academic Awards project ‘Improving Student Learning’. A shortened version of the ASI was used to monitor changes in the quality of student learning, in a similar way to that described for the two courses in this study. Four of the case studies did report increases in achieving and deep
approach scores and a decrease in surface approach. In one project an experimental
group had significantly better ASI scores than a control group. Three of the case
studies reported no significant differences in before and after achieving and deep
approach scores. One case study did not report ASI scores and one project had to be
aborted.

Researchers argued that such a decline in deep approaches was due to undesirable
contextual factors prevailing in most tertiary institutions, including work pressure,
assessment pressure, extrinsic motivation, didactic teaching, surface demands of
lectures, etc. Many of these contextual factors can be changed to improve the quality
of student learning. The association of contextual factors with learning approaches
will be discussed in Section 2.7.

2.6 Another approach to learning: Intending to both memorize and
understand

The review of the research literature up to this point has shown that there is a growing
consensus among researchers in their accounts of students' approaches to learning,
with the terms surface approach and deep approach being the most commonly used.
The most important aspect of the distinction between these approaches lies in the
student's intention – or the absence of such intention – to understand. This distinction
is common to the summaries by Biggs (1987a) and Entwistle (1987), and the literature
review by Richardson (1994).

Rote learning, a mechanical act without any thought given to the meaning of what is
being learnt, is by definition part of a surface approach because there is no intention to
seek meaning. However, students may also memorize and rehearse with the intention of seeking meaning.

Kember and Gow (1990), in their survey of approaches to learning by 1,043 students at a Hong Kong tertiary institution, found evidence of an approach which they described as 'narrow orientation', in which students had the intention to both understand and memorize. This approach was characterized by the students as systematically working through material section by section, attempting to first understand and then memorize what they had learnt. A quotation from a student illustrates the approach taken:

I read in detail section by section. If I find any difficulties I try my best to solve the problem before I go onto the next section.... If you don't memorise important ideas when you come across them, then you will be stuck when you go on. You must memorise and then go on – understand, memorise and then go on – understand, memorise and then go on. That is my way of studying.  

(Kember & Gow, 1990, p. 361)

Kember & Gow (1990) summarized the characteristics of this approach as follows: learning tasks are defined by the lecturer; understanding is sought in a narrow but systematic step by step approach; as each part of the task is understood, an attempt is made to memorize the pertinent detail.

Other work has since emerged to substantiate the hypothesis of an approach in which students have the combined intentions of understanding and memorizing. Tang (1991) found a learning trait in her interviews with Hong Kong students in a tertiary
institutions that she referred to as 'deep memory'. She suggested that memorization could be divided into two categories, labelled 'surface memorization' and 'deep memorization'. In the surface memorization approach, the student attempted to memorize the material without seeking understanding. The deep memorization approach was adopted by students who desired to use a deep approach but found that their courses, and particularly the assessment of them, stressed reproduction. They therefore employed a combination of understanding and memorizing. A typical quotation illustrates both the approach and the rationale for it:

You have to memorize for a test, but you still need to understand first. If you try to rote memorise you soon forget.... Rote memory cannot be that long term, while a memory with understanding can be a long term one.

(Tang, 1991, p. 155)

Watkins (1994) concluded on the basis of his interviews with Hong Kong secondary school students that students developed through a sequence of three or four stages. Initially their intention was to learn through reproduction by rote learning everything. As they progressed through the school, the memory load became such that some selection became necessary. The students then passed to the next stage of rote learning only important things. In a subsequent stage of development, the students started to see the benefit of trying to understand material before committing it to memory.

Understanding was essentially used as a technique for more efficient memorization as the students retained the aim of reproducing model answers to obtain good grades. Watkins (ibid) believed there was some evidence for a fourth stage in which the intention was understanding and achievement by combining understanding and
memorizing. Students who had reached this stage saw the value of understanding, but found that there was still a need to reproduce material for assessment purposes.

This theme was further taken up by Dahlin and Watkins (2000). Through in-depth interviews with western international school and Chinese system secondary school students in Hong Kong, they showed that Chinese students, unlike their western counterparts, used repetition for two different purposes. On the one hand it was associated with creating a 'deep impression' with memorization, but on the other it was used to deepen or develop understanding by discovering new meaning. The western students on the other hand tended to use repetition only to check that they had really remembered something. This finding was consistent with another cross-cultural difference identified by Dahlin and Watkins. Whereas western students saw understanding as usually a process of sudden insight, Chinese students typically thought of understanding as a long process that required considerable mental effort.

2.6.1 The paradox of the Asian student

The employment of a learning approach combining understanding with memorizing would appear to provide part of the answer to the so-called paradox of the Asian student.

When Asian students were observed attempting to memorize material, it was widely assumed that they were following a surface approach. Their strategy was equated to rote learning with no attempt at understanding, which is the descriptor of a surface approach derived from the original studies in the west. On the other hand, Asian
students frequently outperform their western counterparts. Comparative studies of academic achievement show that students in cultures with a Confucian heritage, such as China, Hong Kong, Japan, Korea, Singapore, Taiwan and Vietnam, consistently outperform their western counterparts, particularly in the areas of mathematics and science (International Association for the Evaluation of Educational Achievement cited by Biggs, 2001).

Yet, in previous studies, the use of a surface approach had been negatively related to academic outcomes. Typically, researchers have found small negative correlations between actual or perceived performance and a surface approach, and small positive correlations with deep approach scores (e.g., Biggs, 1987a; Entwistle & Ramsden, 1983). Rote learning strategies should not result in high academic achievement if courses are consistent with the espoused ideals of higher education.

Kember and Gow (1990) and Kember (1996) obtained evidence that Hong Kong students employ a learning approach which combines memorizing with understanding, and this could explain much of the paradox of Asian students. This (first) explanation is that this approach is the result of Chinese children having to learn Chinese characters from an early age, specifically they being schooled to place value in memorization when learning Chinese characters. Since each Chinese word is represented by a unique character or character set, children need to remember the characters and learn how to write them through patient copying.

Characters are traditionally learned by the application of the Two Principles. The First Principle is to use the five organs: eyes to see the shape, ears to hear the sound, hand
to write, mouth to speak the sound, mind to think about the meaning; the Second Principle is to form each character into a word, and each word into a sentence. This approach makes for repetitive, maybe even rigid learning, but learning is always embedded in meaning, or that at least is the intention. This means much use of learner activity and involvement, a key ingredient in quality learning (Biggs & Moore, 1993), and while such learning is 'rote', it is not surface learning as argued by Biggs (1996a). Chinese society is not alone in placing value on rote learning; for example, in Japan, the traditional belief is that repetition is a route to understanding, and that it tends to mould the learner's response into the required form prior to analytical understanding. Hess and Azuma (1991) claim that understanding through repetition is an important technique for learning characters in Japanese schools.

A second possible explanation for students being more likely to combine understanding and memorization is a concern with their English abilities, which would have been true for most of the studies carried out in Hong Kong. As the population of Hong Kong is almost entirely comprised of Cantonese speakers, English is used so little that few students have a level of fluency in the language which would qualify it as their second language. The limited use of English in Hong Kong in general means it is effectively an auxiliary language rather than a second language, and within the classroom is very much restricted to formal interaction.

That English language ability provides at least one possible explanation for students' tendency to combine understanding with memorization is evidenced by Kember and Gow (1990), who showed significant negative correlations between the narrow (surface) approach and an English language ability scale. This means that the
characteristic components of the surface approach were more prevalent among those with lesser ability in English. It is possible that those with poor command of English find it difficult to scan through a document to find the main points or, in lecture, are unable to sense the key concepts. Instead, such students might work through a text step by step, focusing initially on its rhetorical aspects, i.e., letters, words and sentences, and in a lecture they might concentrate on copying from a blackboard or overhead projection (Gow & Kember, 1990).

A third possible explanation may be found in cultural influences. The Confucian tradition values education, diligent study and reflective thinking; considers education a means of personal and social improvement; and associates education and learning with effort and will power. The concept of the attainability of human perfectibility is expressed in terms of ‘sagehood’ in the Confucian tradition, and is closely related to education. For Xunzi (an ancient Chinese literature on ethics), sagehood can be attained through learning and effort:

Now suppose a man in the street pursues knowledge and devotes himself to learning, by concentration of mind and singleness of purpose, thinking, studying and investigating, day in and day out, with persistence and patience. He accumulates goodness without ceasing, and then may be counted among divinities, to form a triad with heaven and earth. Sagehood is a state that any man can achieve by cumulative effort.

(Collected in Chai, 1965, cited by Lee, 1996)

Xunzi’s collected works have a chapter entitled ‘An Encouragement to Study’, in which the significance of effort in the process of learning is profoundly expressed:
Sincerely put forth your efforts, and finally you will progress. Study until death and do not stop before. For the art of study occupies the whole of life; to arrive at its purpose, you cannot stop for an instant. To do that is to be a man; to stop is to be a bird or a beast.

(Hsun Tse, 1928, cited by Lee, 1996, p. 32)

On the other hand, in a review of the literature on Chinese patterns of socialization, Ho (1986) showed that great emphasis was placed on obedience, proper conduct, moral training, and the acceptance of social obligations, all in contrast to the lack of any emphasis on independence, assertiveness, and creativity.

A fourth and final explanation may be related to the form of assessment. Tang (1991) claims that her interviews with students indicated that they set out with the intention to use a deep approach and understand the course materials. However, they then found that the assessment of the course required them to reproduce defined bodies of knowledge. Hence, after first trying to understand the material, the students then learnt it by heart so that they could reproduce it in their examinations and obtain good marks.

The existence of the paradox of Asian students being widely observed attempting to memorize material yet performing well academically can be interpreted as evidence of combining memorizing and understanding. Research in Asia (Marton et al., 1996; Biggs, 1996a, 2001; Kember, 1996; Watkins & Biggs, 1996) has also described approaches which combine the intention to understand and memorize, either by regularly and systematically memorizing what has first been understood or by employing repetition and memorization as a path to understanding. However, reviews by Richardson (1994) of the large body of research into learning approaches in
Western countries do not describe this combined approach. This does not mean that Western students do not use the combined approach, but it does make it more probable that it is less prevalent in the West than in Asian countries.

2.7 Contextual influence on approaches to learning

It has been claimed several times above that contextual factors experienced by student learners may influence their approaches to learning positively or negatively. That is, the approaches to learning adopted by students are related to contextual factors, which is a basic assumption of this study.

Ramsden and Entwistle (1981) explored the effects of the attitudes of academic departments on students' approaches to learning. The study covered 2,208 students from sixty-six academic departments in six disciplines at British universities and polytechnics. They obtained evidence that students' academic progress was related strongly to organized study methods and positive attitudes to studying. Academic progress was also related, though less strongly, to what was perceived as good teaching and a light workload. There was a clear indication that departments which rated high on good teaching and freedom in learning had students with higher deep approaches in learning. Moreover, a positive evaluation of departments is associated with positive attitudes to studying.

Other research also suggests that students' perceptions of their learning environment is related to the approach to learning adopted by them. Ramsden (1992) reports on studies of the relations between students' perceptions of their learning environments
and their approaches to learning. His study finds that students who perceive the nature of the assessment as encouraging memorization and recall, and who perceive the workload demands of a subject as high, are more likely to adopt a surface approach.

Trigwell and Prosser (1991b) studied the relationship between students' perceptions of their learning context and the learning approaches adopted by 122 first-year university nursing students in Australia. Data were obtained from four instruments or sources: quantitative differences in learning outcome were based on the students' assessment marks on the course; qualitative differences in students' learning approaches came from use of Approaches to Studying Inventory (ASI); qualitative differences in learning outcomes from a SOLO taxonomy analysis of students' responses to a question, and students' evaluation responses were collected from a teaching evaluation questionnaire. It was found that a deep approach is associated with a perception of high-quality teaching, some independence in choosing what is to be learned, and a clear awareness of the goals and standards required in the subject. Trigwell and Prosser suggest that to improve the quality of students' learning and their learning outcomes, university teachers first need to determine students' perceptions of their assessments, their workloads, the clarity of goals and standards, the teaching they receive and the learning choices they are given. Adjusting the context that allows changes in students' perceptions may be an important strategy in improving learning.

Regarding the situation in Hong Kong, there is much research available relating to workload and assessment methods and their impact on students' approaches to learning (e.g., Tang, 1991; Biggs, 1992, 1999; Kember et al., 1997). Kember et al. (1997) showed that there is a complex interrelationship between learning approaches,
workload and assessment within the teaching and learning environment. Biggs (1999) reviewed the nature of assessment and showed how different models and assumptions about assessment have ‘backwash’ effects on learning and teaching, and specifically how these factors operate in Hong Kong institutions. The problem of the ‘backwash’ is that it is assessment that dominates and determines student learning rather than the official curriculum.

In 1992 the British Council for National Academic Awards funded a research project aimed at improving student learning in higher education in the UK. The research included a number of case studies involving a wide variety of innovations in a wide variety of learning contexts. Many of the conclusions reported by Gibbs (1992) have implications for an improvement in student learning, such as the following:

1. A surface approach is very common
2. Individual differences in approaches are very wide
3. Most students are capable of adopting either a surface or a deep approach
4. It is possible to change students’ approaches to learning
5. It is easier to change students’ approaches early in a course than towards the end
6. Assessment dominates students’ thinking to a considerable extent
7. Successful innovations may have only local or short-term impacts
8. It is possible to have a pervasive impact on students
9. The appropriate focus of attention in improving the quality of student learning is course design and process
2.7.1 Teaching and approaches to learning

Related to the association of contextual factors with approaches to learning, it is obvious that many of the contextual factors are in fact decided upon by the teacher, and those decisions in turn are moulded by the teacher's conception of teaching. Gow and Kember (1993), in a study of the conceptions of teaching held by lecturers in the Hong Kong Polytechnic (now the Hong Kong Polytechnic University) and their relationship to student learning, demonstrated that conceptions of teaching as facilitation of learning encouraged deep approaches to studying, while conceptions of teaching as knowledge transmission were more likely to encourage surface approaches. They collected evidence that showed that the predominant view of teaching within a department influences the approaches to studying demonstrated by the students. They therefore contend that if it is considered desirable that students adopt meaningful approaches to learning, then it is important to direct initial attention towards the lecturers' conception of teaching.

Kember and Kwan (1997) interviewed Hong Kong lecturers to discover how they characterized their conceptions of teaching as well as what their approaches to teaching were. They arrived at two broad categories of conceptions of teaching, 'transmission' and 'facilitation' teaching. Regarding their approaches to teaching, they found teachers to vary on a continuum from content-centred to learning-centred approaches. Examining the conceptions of teaching held by individual teachers in relation to their teaching approaches, they detected a strong relationship. Teachers who conceived of teaching as transmitting knowledge were more likely to adopt content-centred approaches to teaching while those who espoused a facilitative conception tended to use learning-centred approaches.
Based on his review of research into conceptions of teaching, Kember (1997b) expressed the relationships between conceptions of teaching, teaching approaches and learning outcomes in the model shown in Figure 2.3. In this model, a relationship displayed horizontally portrays the effect of conceptions of teaching being exerted through teachers' teaching approaches on student learning approaches and eventually on student learning outcomes. The model also includes other contextual factors, such as students' presage factors, curriculum design and institutional and departmental influences; their interactions with conceptions of teaching, approaches to teaching and student learning approaches are indicated by arrows.

![Figure 2.3 Relationship between conceptions of teaching, teaching approaches and learning outcome](image)

(From Kember, 1997b)

The models of approaches to learning and teaching practices reviewed above and the 3P model by Biggs (1993b) provide the theoretical basis for the experimental design
of this study. All of them emphasize the outcome, i.e., the quality of students' learning is related to the students' approaches to learning and affected by students' presage factors and teaching practices.

2.8 Research into improving student learning

There is evidence of a clear link between teaching activities and approaches to learning. Pennington and O'Neil (1994), summarizing then recent published research into student learning and good teaching practices, identified eight important principles which they described as commitments for teachers and organizations to encourage deep learning at university. Such teaching, they argue, should be planned to achieve the following objectives:

(i) **Enhance students' general capabilities and work-related skills**
- Encourage learners to be self-reliant and to develop independent modes of learning.
- Develop students' personal qualities, e.g., self-esteem and intellectual capabilities.
- Enable the most socially useful type of learning, i.e., learning how to learn and life-long learning skills.

(ii) **Use students' experience as a learning resource**
Students have valuable experience and knowledge which needs to be built upon by inviting their participation as co- and peer-tutors.

(iii) **Encourage active and co-operative learning**
Make sure that learners are active during learning sessions, and create opportunities for learners to reflect on their experience and relate this
experience to theoretical models and explanations.

(iv) *Promote responsibility in learning*

It is vital that students come to feel in control of their learning and their development, and they should thus be given opportunities for self-managed projects and self-constructed modules.

(v) *Engage with feelings, values and motives as well as with intellectual development*

This has a connection with the value placed on students as people and leads to the provision of learning opportunities and encounters which involve the whole person – feelings, values and motives as well as intellect.

(vi) *Foster open, flexible, reflexive and outcomes-based assessments*

Assessment should entail:

- Assessing learning through a combination of self-, peer- and teacher-assessment process;
- Developing assessment strategies congruent with clearly defined learning outcomes;
- Introducing new assessment strategies which are cost effective in terms of large group sizes and complementary to the development of student autonomy.

(vii) *Evaluate teaching and learning*

The ethos is very much that the teacher should be a reflective practitioner.

(viii) *Establish congruence between teaching and learning activities*

The main idea is to develop new, organization-wide strategies for effective teaching and learning which involve the alignment with policies for the
enhancement of the physical and material learning environment, e.g., library, computing room, lecture room, and study spaces.

Gibbs (1992), in his project ‘Improving Student Learning’, suggested that there is still plenty of room for teaching skills to be developed among teachers which have an impact on students’ learning. He identifies a range of strategies that teachers can integrate into the curriculum to improve the quality of student learning by fostering a deep approach, including the following:

(i) **Independent learning**
(ii) **Personal development**
(iii) **Problem-based learning**
(iv) **Reflection**
(v) **Independent group work (interaction between students)**
(vi) **Learning by doing**
(vii) **Developing learning skills**
(viii) **Project work**

(Gibbs, 1992, pp. 12-17)

This study will draw on Biggs (1999) for a framework of factors and ways to improve student learning. According to Biggs, factors that encourage students to adopt a *surface approach* include:

(i) *An intention only to achieve a minimal pass.*
(ii) *Non-academic priorities exceeding academic ones*
(iii) *Insufficient time, too high a workload.*
(iv) *Misunderstanding requirements, such as thinking that factual recall is adequate.*
A cynical view of education.

High anxiety.

A genuine inability to understand particular content at a deep level.

Teaching in a piecemeal fashion, providing 'lists', not bringing out the intrinsic structure of the topic or subject.

Assessing for independent facts, as is frequently done when using short answer and multiple-choice tests.

Teaching, and especially assessing, in a way that encourages cynicism, for example, "I hate teaching this section, and you're going to hate learning it, but we've got to cover it".

Providing insufficient time to engage the tasks, emphasizing coverage at the expense of depth.

Creating undue anxiety or low expectations of success: "Anyone who can't understand this isn't fit to be at university".

Factors that encourage students to adopt a deep approach include:

From the students' side:

(i) An intention to engage the task meaningfully and appropriately; such an intention may arise from an intrinsic curiosity or from a determination to do well.

(ii) Appropriate background knowledge; the ability to focus at a high conceptual level, working from first principles, requires a well structured knowledge base.

(iii) A genuine preference, and ability, for working conceptually rather than with unrelated detail.
In the teaching environment:

(i) *Teaching in such a way as to bring out the structure of the topic or subject explicitly.*

(ii) *Teaching to elicit a positive response from students, e.g., by questioning or presenting a problem, rather than teaching to expound information.*

(iii) *Teaching by building on what students already know.*

(iv) *Confronting and eradicating students' misconceptions.*

(v) *Assessing for structure rather than for independent facts.*

(vi) *Teaching and assessing in a way that encourages a positive working atmosphere, so students can make mistakes and learn from them.*

(Biggs, 1999, pp. 15-17)

2.9 Summary

There has been a surge of interest in studying student learning in Western countries, beginning in the 1970s. Contributions from various researchers, such as Biggs, Entwistle, Pask, Ramsden, and, in particular, Marton and his colleagues in Gothenburg, have developed into the conceptual framework of 'deep' and 'surface' approaches to learning which has brought about a major impact on contemporary teaching and learning in higher education. This conceptual framework also provides the theoretical framework for this study on student learning.

According to Biggs (1999, p. 17), students do have predilections about this or that approaches to learning, but those predilections may or may not be realized in practice,
depending on the teaching context. Where the teaching context is conducive to deep approaches, the students will tend to approach their learning deeply. Where the context is more restrictive, and students perceive that surface approaches will suffice, they tend likewise to adapt. A surface approach is more likely if the students lack interest or if the teaching context encourages that approach through reproductive methods of assessments, didactic teaching, a focus on transmitting information, or an excess workload.

In Hong Kong, there is abundant research available relating to approaches to learning, e.g., Kember and Gow, 1990; Balla et al., 1991; Choy, 1991; Biggs, 1992; Tang, 1993; Watkins, 1994. Cross-cultural studies comparing Chinese students with their Western counterparts have challenged the anecdotal stereotype of the Asian student as rote learner. Such studies have lead researchers to review the role of memorization in learning and to conclude that it has a role in understanding (Tang, 1991; Biggs, 1992, 1996a and 2001; Kember, 1996; Watkins & Biggs, 1996). This has provided one of the explanations for the paradox of Asian students from a Confucian heritage culture (Kember & Gow, 1990; Kember, 1996).

Furthermore, the way students approach learning influences the quality of their learning outcome. Students who adopt a surface approach to learning are unlikely to achieve the quality understanding of their subject that would be expected of a university student, whereas a deep approach leads to the type of learning that university teachers and future employers expect university students to exhibit (Ramsden, 1988).
A good teaching context should therefore discourage the factors that lead to the adoption of a surface approach and encourage the factors that lead to the adoption of a deep approach to learning. Creating a good teaching context involves finding out how students in a particular subject or context approach their learning, and addressing this in the teaching of the subject matter. It involves an exploration of the factors which may be related to the approaches adopted by students, and reflection on what can be done about any or all of those factors to encourage deeper approaches to learning.
Chapter 3: Methodology

The principal research concern of this study is to understand how and why the PolyU students learn and develop their particular learning approaches. It also aims to make recommendations on how the university can set up learning situations that will lead to an improvement in the quality of student learning. To those ends, the study will evaluate the contextual influences on two groups of students from two departments in the PolyU.

This chapter begins by restating the aims of the research and the four research questions that determined the design, the process and the selection of appropriate instruments and schedules. It will then proceed to examine the validity and reliability of the instruments used. Finally, it will outline the various methods of analysis employed and the limitations of the analyses applied in the study.

3.1 Research design

The aims of the study were, broadly, to identify and evaluate the impact of university teaching on the approaches to learning adopted by students at the PolyU. Three specific objectives were identified:

(i) To provide a comprehensive understanding of how the PolyU students learn and develop their approaches to learning during their course of study.

(ii) To develop an understanding of the impact of university teaching on the approaches to learning adopted by the PolyU students.
(iii) To make recommendations which can be used by the university to improve the quality of student learning.

In order to achieve the above objectives, four main research questions were formulated:

(i) What are the approaches to learning adopted by two groups of PolyU first-year students from two departments?

(ii) Do students change their approaches to learning as they progress through their courses of study?

(iii) What are the factors in the learning context provided by the departments that are related to students’ approaches to learning?

(iv) Are the approaches to learning adopted by students effective predictors of students’ academic performance as measured by Grade Point Average (GPA) and their degree of ‘satisfaction with university experience’?

3.2 Methodology

The research orientation of the study is set within an ‘interpretivist paradigm’. The essential characteristic of interpretivist theory of research into student learning is its interest in understanding learning from the perspectives of the students as it happens in natural settings (Saljo, 1988).

In broader terms, interpretivism is about the interpretation of the meanings of human activities. Interpretive studies, as Pearse (1983) puts it, explore the relationship of a person with the social world that the person experiences. Such studies look for the
meanings that people give to phenomena encountered in their own social world, and as a result the world views found are experiential and context-dependent. The interpretive tradition has a long intellectual history and is associated with research methodologies such as hermeneutics, which is the study of the interpretation of text meaning, and phenomenology, which looks at the intersubjective meaning of world phenomena (Miles & Huberman, 1994). However, the methodology of phenomenography, which has an important influence on contemporary interpretivist research into learning, is a relatively newly emerged one (Marton, 1981; Marton et al., 1997).

In the phenomenographic tradition, learning is studied from the perspective of the learner, not that of the teacher or researcher, and the object being investigated is how students construct the content of their learning. Usually such constructions, or conceptions, can be expressed in a limited number of hierarchically ordered ways, with some learners having partial or superficial conceptions of the intended topic, and others sophisticated ones. Learners may comprehend, more or less, the teacher's perspective, but they genuinely learn only what they construct from their own perspective. Their approach to learning is how they go about that construction, while these constructions themselves can be taken as outcomes of their learning.

The normative paradigm, in contrast to its interpretive paradigm counterpart, contains as a key concept that behaviour refers to responses either to external environmental stimuli or to internal stimuli. Normative researchers try to devise general theories of human behaviour and to validate them through the use of complex research methodologies which, according to Cohen and Manion (1994), "push them further and further from the experience and understanding of the everyday world into a world of
abstraction” (p. 37). For normative researchers, the basic reality is the collectivity, which is external to the actor. The researcher’s ultimate aim is to establish a universal theory to account for human and social behaviour.

3.3 Study design

Set within an interpretivist research paradigm, this study will nevertheless combine elements of interpretive and normative approaches. It may be more inclined to the interpretive approach as the study focuses mainly on understanding learning from the perspectives of the student. It will contain some elements of normative approach of explaining behaviour and seeking the causes for such behaviour. Since the scope of the study is limited to one institution, it is a case study aiming to understand how the two groups of PolyU students develop their approaches to learning.

Yin (1984) defines a case study method as an enquiry that investigates a contemporary phenomenon within its real-life context. A case study method offers the flexibility that many educational research models need. According to Anderson (1998), “Education is a process that requires a research method which is process-oriented, flexible and adaptable to changing circumstances and a dynamic context. Given these boundaries, case study method is often appropriate” (1998, p. 152).

3.3.1 Both quantitative and qualitative methods

To accomplish the broad aims and specific objectives of the study, its research design incorporates both quantitative and qualitative techniques. In the first stage of the study,
questionnaires will be used to discover the pattern of learning approaches employed by two groups of students and their changes in learning approaches as they progress through their course of study.

Since students' learning approaches are influenced by their learning contexts, in the second stage of the study, interviews to collect qualitative data will be employed to understand the contextual variables present in the students' learning environments from their points of view, and to find out the reasons for any changes in their learning approaches.

The use of quantitative and qualitative methods at different stages of research is supported by Merton and Kendall (1946), who stated that, "Social scientists have to abandon the spurious choice between quantitative and qualitative data: they are concerned rather with that of both which makes use of the most valuable features of each. The problem becomes one of determining at which points they should adopt the one, and at which the other approach" (cited by Cohen & Manion, 1994, p. 40).

There are advantages in both quantitative and qualitative methods in research investigating student learning. Quantitative methods are particularly useful for studying consistency in behaviour, usually employing (i) standardized measuring instruments administered under controlled conditions to a large number of subjects, and (ii) sophisticated statistical analyses. Biggs and Watkins (1993) argued that despite the attempted objectivity of the quantitative approach, the students' perspective could be difficult to interpret. A major problem according to Biggs and Watkins is that the context of learning, particularly as perceived from the students'
perspective, is difficult to probe further through standardized questionnaires and statistical analysis. Qualitative methods, which may range from open-ended comments supplementing questionnaires to in-depth interviews, are usually more useful for exploring factors that influence students' approaches to learning.

Furthermore, the use of both qualitative and quantitative methods of research is also found in triangulation, an approach which involves the use of more than one research techniques or investigations. Triangulation is a means of enhancing both the internal and external validity of a study (Cohen & Manion, 1994; Creswell, 1994).

Cohen and Manion (1994) state that research methods act as filters and they are never theoretically neutral in representing the world of experience. When the researcher exclusively relies on one method, he or she may bias the research picture of the reality.

Greene et al. (1989) discuss the benefits of using a multi-method approach in a single study, listing five:

(i) Triangulation, in the classic sense of seeking convergence of results.

(ii) Complementarity, in that overlapping and different facet of a phenomenon may emerge (like peeling the layers of an onion).

(iii) Development, wherein the first method is used sequentially to help inform the second method.

(iv) Initiation, wherein contradictions and fresh perspectives emerge.

(v) Expansion, wherein the mixed methods add scope and breadth to a study.

The present researcher believes that a fuller understanding of the impact of university
teaching on student learning may be provided through a combination of quantitative and qualitative methods. In the first stage, therefore, the study will employ a standardized questionnaire to understand the pattern of students' learning approaches use by both individuals and the groups of students, while in the second stage it will employ interviews to obtain detailed knowledge of why and how students develop their particular approaches after one year at university.

3.4 Research sample

The students who took part in this study are from the PolyU, which is the largest tertiary institution in Hong Kong with a student population of about 17,000, of whom approximately 11,500 are full-time and 5,500 part-time students. It offers programmes in six faculties, namely, (i) Applied Science and Textiles, (ii) Business and Information Systems, (iii) Communication, (iv) Construction and Land Use, (v) Engineering, and (vi) Health and Social Sciences, leading to awards at both undergraduate and postgraduate levels. A major characteristic of the programmes is their practical nature (The Hong Kong PolyU in Figures, 2001 – 2002).

Due to the need to limit the scope of the study, and the practicalities involved in the collection of longitudinal data on individual students over an extended period of time, the study will only look at changes in first-year students in two departments, since the first year at university is considered one of the crucial years in students’ lives (Gibbs, 1992).

The two groups of students were selected from two different departments in the
PolyU. One group (n = 59) was selected (see below for description of the selection process) from a degree course offered by the Department of Hotel & Tourism Management (HTM), a course that is vocationally oriented. The course consists of many practical subjects and has been ranked in the top five in the 'Popularity list in the PolyU' in the last three years 2000 – 2002 (Admission Statistics 2001-2, The Hong Kong PolyU, 2002).

The second group (n = 40) was selected from a degree course offered by the Department of Applied Physics (AP). This course consists of a number of theoretical subjects and is not geared to a special vocation. The staff teaching this course have complained that it cannot attract good academic students. The AP course, even though it contains some subjects on engineering, is not geared to any specific vocation. The AP course is unlike most of the courses offered by the PolyU, which tend to be practical and closely associated with a particular profession. Due caution is exercised in making comparisons between the student groups in this study since the two departments differ greatly in the nature of the courses offered by them, their teaching philosophy, and the teaching climates and learning environments created.

3.5 Research instruments

The questionnaires used in the first stage comprised the Study Process Questionnaire (SPQ) developed by Biggs (1992), see Appendix I, and a short questionnaire, see Appendix II. The SPQ was used in a 'repeated measures' design to determine changes in learning approaches after one year. The short questionnaire was developed by the present researcher to identify students' degree of satisfaction with their university
experience. Student and teacher interviews were employed in the second stage to determine the factors related to the approaches to learning adopted by the students.

3.5.1 Study Process Questionnaire (SPQ)

The Study Process Questionnaire (SPQ) is an empirically-derived instrument which aims to examine the quality of learning by students; in particular, it assesses students' approaches to learning. The SPQ Hong Kong version (Biggs, 1992) used in the present study was based on the 42 items of Biggs' SPQ (1987a), translated into Chinese by a research team at the Hong Kong University led by Biggs. Researchers at five tertiary institutions in Hong Kong had given students a common version of the questionnaire, which had the item statements in English, followed immediately by a Chinese translation.

Scores are obtained for each student on 'deep', 'surface' and 'achieving' approach scales. A deep approach to learning is utilized when the student is interested in the task and therefore strives for understanding. The surface approach is based on a motive to minimize effort and also to minimize the consequences resulting from low effort, in other words, it is outcome-oriented. The achieving approach is described by Biggs (1987a) as being based on extrinsic motivation, such as gaining high grades. The learner uses strategies, often referred to as study skills, to organize time, working space and syllabus in an efficient way.

The SPQ Hong Kong version (Biggs, 1992), like the original Australian version, consists of forty-two items, with seven items constructed to reflect each of the
sub-scales, i.e. surface, deep and achievement motive (SM, DM & AM); and seven items to reflect surface, deep and achievement strategy (SS, DS & AS). Table 3.1 provides a brief description of the meaning of each sub-scale, and Table 3.2 the classification of the forty-two items in the SPQ.

**Table 3.1  Brief description of SPQ sub-scales**

<table>
<thead>
<tr>
<th>Approach</th>
<th>Motive</th>
<th>Strategy</th>
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</thead>
<tbody>
<tr>
<td>Surface</td>
<td>Surface Motive (SM)</td>
<td>Surface Strategy (SS)</td>
</tr>
<tr>
<td></td>
<td>Instrumental: to pass without working too hard</td>
<td>Reproductive: to rote learn essentials</td>
</tr>
<tr>
<td>Deep</td>
<td>Deep Motive (DM)</td>
<td>Deep Strategy (DS)</td>
</tr>
<tr>
<td></td>
<td>Intrinsic: to really understand</td>
<td>Wide reading: to link with previous knowledge</td>
</tr>
<tr>
<td>Achieving</td>
<td>Achieving Motive (AM)</td>
<td>Achieving Strategy (AS)</td>
</tr>
<tr>
<td></td>
<td>Ego-building: to get best grades</td>
<td>Time management: to be a “model student”</td>
</tr>
</tbody>
</table>

(Adapted from Biggs, 1987a)

**Table 3.2  Classification of the 42 items in SPQ**

<table>
<thead>
<tr>
<th>Approach</th>
<th>Motive Items</th>
<th>Strategy Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>1,7,13,19,25,31,37</td>
<td>4,10,16,22,28,34,40</td>
</tr>
<tr>
<td>Deep</td>
<td>2,8,14,20,26,32,38</td>
<td>5,11,17,23,29,35,41</td>
</tr>
<tr>
<td>Achieving</td>
<td>3,9,15,21,27,33,39</td>
<td>6,12,18,24,30,36,42</td>
</tr>
</tbody>
</table>

(Biggs, 1992, p.45 )

An example of a surface motive in the SPQ is illustrated by Question 1: “I chose my present courses largely with a view to the job situation when I graduate rather than because of how much they interest me.” An example of a surface strategy is illustrated
by Question 4: “I think browsing around is a waste of time, so I only study seriously what's given out in class or in the course outlines.” (See Appendix I)

An example of a deep motive is illustrated by Question 2: “I find that studying gives me a feeling of deep personal satisfaction.” An example of a deep strategy is illustrated by Question 5: “While I am studying, I think of real life situations to which the material that I am learning would be useful.”

An example of an achieving motive is illustrated by Question 9: “I have a strong desire to excel in all my studies.” An example of an achieving strategy is illustrated by Question 12: “I try to work consistently throughout the term and review regularly when the exams are close.”

Each item in the SPQ is a self-report statement that respondents rate on a 5-point scale, from 5 (‘this item is always or almost always true of me’) to 1 (‘this item is never or only rarely true of me’).

Some recent examples of the use of the SPQ instrument to investigate student learning include studies with British psychology students (Wilson et al., 1996), Chinese health-care students (Jones & Jones, 1996; McKay & Kember, 1997), Australian nursing students (Murray-Harvey, 1994) and Southeast Asian students studying economics in Western Australia (Volet et al., 1994).
3.5.1.1 Reliability of the SPQ Hong Kong version

The Hong Kong version of the SPQ with Chinese translations (Biggs, 1992) was tested for a variety of aspects to establish its reliability. A large variety of course programmes at various levels in Hong Kong tertiary institutions were involved, and a number of different academic departments. Data were collected from a total of 2,338 undergraduate students. One aspect tested for was its stability or consistency over time, which is estimated by correlating a set of scores on one occasion with the scores of the same people on a later occasion. Biggs found it "encouraging that the scores do intercorrelate significantly over a considerable period of time, but one would not want that correlation to be too high, because one would expect that important things would be happening to students' motives and strategies" (Biggs, 1992, p. 36). In other words, Biggs meant that the longer the period between testing, the lower the test - re-test correlations are likely to be, not only because of inherent instability in the scores but because over longer time periods genuine changes in a person's score are more likely to take place, for a variety of reasons. The results by Tang (1991) for two and four month intervals showed the test and re-test to have a 'reasonable' correlation.

Another aspect of reliability is the internal consistency, or the extent to which the items comprising each sub-scale give consistent results. The most widely used index of this is the Cronbach alpha coefficient. In the study using the SPQ Hong Kong version, Biggs (1992) had 2,338 students from five tertiary institutions in Hong Kong; two independent studies by Kember and Gow (1990) had 1,043 students from the Hong Kong Polytechnic (now the PolyU); and Balla et al. (1991) had 1,993 students from the City Polytechnic (now City University of Hong Kong) for three consecutive
years. The Cronbach alpha coefficient according to studies by Biggs (1987a), Kember & Gow (1990) and Balla et al. (1991) showed a degree of internal consistency that was good, or better than the original Australian instrument (see Table 3.3). Biggs’ (1987a) research was carried out at five Australian universities and ten Australian Colleges of Advanced Education - these are all now universities just like the Hong Kong and British Polytechnics.

Table 3.3  Internal consistencies of SPQ sub-scales

<table>
<thead>
<tr>
<th></th>
<th>Surface</th>
<th>Deep</th>
<th>Achieving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>S</td>
</tr>
<tr>
<td>All Hong Kong</td>
<td>2338</td>
<td>.53</td>
<td>.65</td>
</tr>
<tr>
<td>*HK Polytechnic</td>
<td>1043</td>
<td>.61</td>
<td>.57</td>
</tr>
<tr>
<td>**CPHK 1988</td>
<td>505</td>
<td>.61</td>
<td>.58</td>
</tr>
<tr>
<td>1989</td>
<td>556</td>
<td>.61</td>
<td>.61</td>
</tr>
<tr>
<td>1990</td>
<td>932</td>
<td>.59</td>
<td>.59</td>
</tr>
<tr>
<td>Australian universities</td>
<td>823</td>
<td>.61</td>
<td>.66</td>
</tr>
<tr>
<td>Australian CAEs</td>
<td>1550</td>
<td>.51</td>
<td>.62</td>
</tr>
</tbody>
</table>

Note: CPHK: City Polytechnic Hong Kong  
Australian universities: 5 Australian universities  
Australian CAEs: 10 Australian Colleges of Advanced Education  
*Kember and Gow (1990)  
**Balla et al. (1991)  
(Source: Biggs, 1992, p. 38)

3.5.1.2  Validity of the SPQ Hong Kong version

In testing the reliability and validity of the research tool a question raised in relation to construct validity is: Does the SPQ relate to the real world that it is intended to relate to?
A great deal of research conducted both in Australia (Biggs, 1987a) and in Hong Kong (Davies, et al., 1994; Biggs, 1992) has demonstrated several relationships between SPQ scores and other variables that confirm the construct validity of the scales and the theory on which they are based. The three main types of approach to learning are surface, deep and achieving approaches. The surface approach is generally associated with negative factors: poor performance, drop-out, poor self-academic concept. The deep approach is associated with positive factors: an 'academic' approach as long as the focus on personally valued subjects, a good academic self-concept, sees oneself as good performer and is satisfied with progress. The achieving approach is also positive academically, but more externally driven by the need to excel.

Cultural relevance is certainly of concern for this study, because the SPQ was originally developed for Australia students and the students in the PolyU are of course predominantly Hong Kong Chinese. Kember and Gow (1990) investigated the cultural specificity of the approaches to learning using Biggs' SPQ (1987a) and the Approaches to Studying Inventory (ASI) by Ramsden and Entwistle (1981) with a large sample of 1,043 Hong Kong tertiary students. Kember and Gow found that the deep and achieving approach scales were reasonably consistent with those obtained in western countries. They suggested that the deep and achieving approaches of both instruments could be used with some confidence in settings other than western countries. However, there appeared to be some cultural influences on the surface approach. The reliability of the surface approach scale was lower than that of the other approaches, which they claimed may result from the emergence of a learning approach by which students try to memorize material, but after seeking understanding.
They concluded that the “SPQ provided some insights into the meaning of the two studying orientations. There would seem to be no reason to discourage the use of these instruments in non-western countries, provided care is taken in the interpretation” (Kember & Gow, 1990, p. 362).

A further review by Watkins (1996) agreed that there were generally adequate reliability estimates for the SPQ with Hong Kong tertiary students. Factor analysis of the SPQ generally supported the distinctions between deep and surface orientations and suggested that the SPQ can be used with a reasonable degree of confidence with the student sample in Hong Kong.

Even though the reliability of the SPQ has been shown to be high both in terms of internal consistency and consistency over time, this does not mean that the SPQ does not have its detractors. Richardson (1994) argues that the three SPQ scales of deep, surface and achieving learning are more appropriately represented by two more generalized factors, these being a general deep approach and a general surface approach.

The present researcher is aware of Biggs’ recent work (Biggs et al., 2001) which is a revised two-factor version of the SPQ. The instrument assesses deep and surface approaches only, using fewer items. Since the first round of questionnaires was administered in September 2000, the researcher had used the earlier version of the SPQ (Biggs, 1992), and this was then also used for the second round of the questionnaires administered in October 2001.
3.5.2 Interviews

3.5.2.1 Student interviews

The main reason for using interviews was to probe in an open-ended manner the way in which students adopted their particular approaches to learning. The interviews would start with some guided questions, followed by open-ended questions. Interviewees were encouraged to illustrate their points with examples from their study.

The following are some of the guiding questions developed on the basis of the Literature Review in Chapter 2 regarding the factors that may encourage students to adopt either a surface or a deep approach to learning, as seen from students' and teachers' perspectives:

(i) Why did you enrol in the course? What was your intention in studying this course – to pass only or to understand?

(ii) Tell me what you are doing and what you are thinking about when you are taking notes, or are in a lecture / seminar / lab, or are reading a book / writing an essay, etc.

(iii) Do you always take the approach you described to study all subjects?

(iv) Did you know very much about the subjects in your course?

(v) What subjects did you like or dislike?

(vi) Did the course require you to be actively engaged or did you feel like a passive recipient?

(vii) What did you think about the workload of the course?

(viii) Did you enjoy the course or did you feel anxious?

(ix) What did you think the assessment required of you?
Did you think the assessment tasks revealed what you thought you had really learned?

What sorts of things did you do when you were preparing for exams?

Did you think the teaching was appropriate?

What do you think gets the marks on this course?

3.5.2.2 Selection of students for interviews

On the basis of the decile scaled scores (Biggs, 1992, p. 100), students were classified as ‘surface biased’, ‘deep biased’ or ‘no bias’. This classification had been used in Lai and Biggs (1994) as follows:

(i) Surface biased: Surface decile scaled score greater than deep decile scaled by at least two deciles.

(ii) Deep biased: Deep decile scaled score greater than surface decile scaled by at least two deciles.

(iii) No bias: The remaining students

On the basis of the two results of any individual student’s pre- and post-SPQ scores we can tell whether they had or had not changed over the course of the year. Six groups of students were arrived at on the basis of the results for individual students (see Table 3.4). The rationale behind the selection of students for each group was to have students from each department representing each category, i.e., six students who had changed and six who had not changed.
Table 3.4 Selection of students for interviews

<table>
<thead>
<tr>
<th>Students’ approaches to learning</th>
<th>No. of students selected for interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change:</td>
<td>Dept of AP</td>
</tr>
<tr>
<td>Surface bias to Deep/No bias</td>
<td>2</td>
</tr>
<tr>
<td>Deep bias to Surface/No bias</td>
<td>2</td>
</tr>
<tr>
<td>No bias to Surface/Deep bias</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Dept of HTM</td>
</tr>
<tr>
<td>Surface bias to Deep/No bias</td>
<td>2</td>
</tr>
<tr>
<td>Deep bias to Surface/No bias</td>
<td>2</td>
</tr>
<tr>
<td>No bias to Surface/Deep bias</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>No Change:</td>
<td></td>
</tr>
<tr>
<td>Surface bias to surface bias</td>
<td>2</td>
</tr>
<tr>
<td>Deep bias to Deep bias</td>
<td>2</td>
</tr>
<tr>
<td>No bias to No bias</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

3.5.2.3 Follow-up interviews with teachers

In their first year, both groups of students took approximately twelve subjects, therefore requiring a number of teachers from each of the two departments to be interviewed; in all, thirteen teachers were invited to take part. They were teaching staff who (i) were responsible for teaching the two first-year groups of students selected; or/and (ii) who were the First-Year Course Leaders in the two departments; and who (iii) were the teachers mentioned in the students’ interviews as ‘special’ for their teaching.

The first drafts of interview questions were used as pilots with two teachers from the two departments in April 2002. Some changes were subsequently made to the interview questions to reflect what the teachers did in the classrooms. The order of
questions were also changed from time to time, as some seemed to link better to the next questions.

The interview questions were as open-ended as possible to allow the teachers to freely express how they actually taught their subject; their views about the objectives of their subject; and how they assessed their students. Some guiding questions were as follows:

(i) How did you teach the subject?
(ii) How did you know whether the students understood your subject?
(iii) How did you assess your subject?
(iv) How was the learning climate in your class?
(v) Did you like teaching the subject?

3.5.2.4 Reliability of interviews

Sources of bias in interviews are unavoidably influenced by the characteristics of the interviewer, the characteristics of the respondent, and the substantive content of the questions (Cohen and Manion, 1994; Creswell, 1994). Regarding the interviewer’s attitudes and opinions, there is a tendency for the interviewer to seek answers that support his/her perceived notions and to arrive at mistaken perceptions of what the respondent is saying. In contrast, there is also the possibility that misunderstanding may be incorporated by the respondent into his/her interpretation of what is being asked.

In preparing interview questions, Tuckman (1972) suggests researchers should be
mindful of the following three issues:

(i) To what extent might a question influence respondents to show themselves in a good light?

(ii) To what extent might a question influence respondents to be unduly helpful by attempting to anticipate what researchers might want to hear or find out?

(iii) To what extent might a question be asking for information about respondents that they are not certain of, and perhaps not likely to know about themselves?

Jones et al. (1999) raised one problem especially related to student interviews, which was that a student may present less than accurate information, due to the unequal power relationship that exists between the student interviewee and the researcher interviewer. There is a real danger that students will feel intimidated by questions put (no matter how friendly and empathetic the interviewer may be), and be inclined to say what they think the interviewer wants to hear, rather than express their real opinions.

There are ways suggested by various writers (e.g., Tuckman, 1972; Maxwell, 1996) to reduce bias and problems in the interview, for example, by careful formulation of questions so that the meaning is crystal clear; by having thorough training procedures so that an interviewer is more aware of the possible problems; by probability sampling of the respondents; and sometimes by matching the interviewer characteristics with those of the students in the sample being interviewed.
In this study, the above issues had been taken into account in the process of planning the interviews. The interview approach also allowed a number of other matters to be addressed, such as the following:

(i) Students would be given the choice to be interviewed individually or with their classmates, the rationale being that a group of students are likely to be less intimidated than an individual.

(ii) To further reduce any feeling of intimidation, at the beginning of each interview the researcher would explain that the information gathered would be used for the researcher's doctorate in education.

(iii) Interviews would be conducted in Cantonese rather than English (besides the two English-speaking teaching staff) since it would obviously be easier for students and teachers to express themselves in their mother tongue. The consequent need for translation to allow access to the primary data by non-Cantonese speakers raised the possibility of some of the original meaning becoming blurred. However, by taking reasonable precautions and making crosschecks it was possible to be confident that English translations would accurately reflect the Cantonese originals.

(iv) All interviews would be audio-taped and transcribed so that the researcher could pick out sections which seemed particularly interesting or important. It would also help the interviewer to concentrate on what the students and teachers said and probe further with questions.

(v) Care would be taken to minimize the threat of 'reactivity' (Maxwell, 1996) as much as possible. Therefore, in all student interviews, it was made very clear to the students that they were expected to answer as truly as possible and it was not necessary to 'make up' changes.
3.6 Method of administration of questionnaire and interview

The administration of the first round of the SPQ to students was undertaken during scheduled classroom sessions in September 2000 for the two groups of first-year students from the Department of Applied Physics (AP) and the Department of Hotel & Tourism Management (HTM). The second round of the SPQ was administered to the same two groups of students in October 2001.

It was felt that administering the SPQ during class would lead to a better response rate than if the questionnaire was simply distributed for the students to complete and return in their own time. A covering letter (see Appendix III) was distributed to students in the class before the questionnaire was handed out. The purpose of the letter was to:

(i) invite them to participate;
(ii) describe and explain the research;
(iii) explain that their participation was totally voluntary;
(iv) explain the confidentiality aspects of the research; and
(v) explain possible benefits of participation for the respondents.

Access to appropriate half-hour periods was negotiated by the researcher, who undertook to facilitate the process of administering the questionnaires herself. In addition to the letter given to each student, care was taken (verbally) to ensure that no student felt compelled to complete the questionnaires.

The researcher conducted all interviews between January 2002 and June 2002.
Student interviews were conducted from January to April 2002, with the researcher inviting students by phone. Most of the students preferred to be interviewed individually; only four students were interviewed in pairs. All student interviews were conducted in a meeting room next to the researcher’s office. The chosen venue was comfortable, and had a relaxed atmosphere. Following some small talk about their study programme and an initial introduction, the semi-structured interview began, lasting about forty-five minutes to one hour.

Teacher interviews were conducted from April to June 2002. All the interviews with teachers were conducted individually, usually in the teacher’s own room. All interviews were tape-recorded. Before starting, the purposes of the interview, i.e., understanding how they teach students, and issues related to teaching and learning in their departments in the PolyU, were explained. Each interview lasted about forty-five minutes to one and a quarter hour.

Table 3.5 shows the actual number of students interviewed, while the number of students invited for an interview was fourteen from each department. The number of students invited was more than originally planned because the researcher wanted to hear from more teachers who had different stories to tell as the interviews proceeded.
Table 3.5  Number of students interviewed

<table>
<thead>
<tr>
<th>Students’ approaches to learning</th>
<th>No. of students interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change:</strong></td>
<td>AP Group</td>
</tr>
<tr>
<td>Surface bias to Deep/No bias</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Deep bias to Surface/No bias</td>
<td>1* (1)</td>
</tr>
<tr>
<td>No bias to Surface/Deep bias</td>
<td>2 (5)</td>
</tr>
<tr>
<td><strong>No Change:</strong></td>
<td></td>
</tr>
<tr>
<td>Surface bias to surface bias</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Deep bias to Deep bias</td>
<td>3 (6)</td>
</tr>
<tr>
<td>No bias to No bias</td>
<td>3 (6)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14 (24)</td>
</tr>
</tbody>
</table>

Note: The number in brackets ( ) gives the number of students in that category.

* There was only one student in the AP Department who was deep bias and changed over the year, so there was the only student in that category selected for the interview.

3.7 Method of analysis

To answer the research questions that guided the investigation, various methods of analysis were employed to generate findings about issues with an impact on the students’ approaches to learning.

The following qualitative data were collected in the two rounds of questionnaires:

First round:

(i) Students’ biographical and other background information

(ii) Individual students’ approaches to learning scores from pre-SPQ
Second round:

(i) Individual students' approaches to learning scores from post-SPQ

(ii) Students' degree of 'satisfaction with university experience' scores.

Students were asked to grade, using a Likert-type scale, their satisfaction level with (i) Teaching in general, (ii) Course quality in general, (iii) Course structure and organization, (iv) Choice of subjects, (v) Assessment and workload, (vi) Relationship with other students, and (vii) Relationship with teachers.

The section on 'satisfaction with university experience' was developed by the researcher to answer one of the research questions, namely, whether there is any relationship between students' approaches to learning and students' satisfaction with their university experience. The relationship between learning approaches and satisfaction is less well developed, and has not been investigated by any researcher in Hong Kong, whereas the literature on the use of the SPQ to investigate aspects of student learning is very extensive.

3.7.1 Analysis of questionnaires

Data were analysed using the Statistical Package for the Social Sciences (SPSS) (Release 10.0). SPQ scores of the approaches to learning by individual students are calculated by summing scores on the respective strategy and motive sub-scales. The deep approach (DA) main scale, for example, is the sum of the deep motive (Items 2, 8, 14, 20, 26, 32, 38) and deep strategy (Items 5, 11, 17, 23, 29, 35, 41) as shown in Table 3.2.
Analysis yielded scores for the approaches to learning in the first and second rounds for an individual student, and mean scores for the approaches to learning (surface, deep and achieving scores) for the two groups of students.

According to an individual student’s pre- and post-SPQ scores, students can be classified as having surface bias, deep bias or no bias on the basis of the normed decile scores (Biggs, 1992, p. 100); this classification was used for the selection of students for the interviews.

Means of the approaches to learning of the two groups of students in the pre- and post-SPQ were compared by t-test to determine whether there were differences in their learning approaches over one year. The t-test was also used to compare the approaches to learning followed by the two groups of students in the beginning of their first and second years respectively.

The end-of-term results, i.e., the GPA scores of students at the end of their first and second years respectively, were provided by the two departments, on condition they did not identify any student.

In order to find any relationship between the approaches to learning and the learning outcome, the latter including students’ GPA scores and their degree of ‘satisfaction with university experiences’, correlational analyses were carried out. Correlations basically describe the strength and direction of any association between two variables in terms of a coefficient that can range from -1.0 to +1.0.
3.7.2 Analysis of the interviews

In order to understand the students' adoption of different approaches to learning and the teaching environments in the two departments, interview data were gathered by semi-structured interviews with twenty-eight students and thirteen teachers from two departments. All students involved in the interviews had participated in two rounds of questionnaire data collection.

All interviews were conducted by the researcher and audio-taped. The total number of tapes was 34 in Cantonese and 2 in English. All the Cantonese audio tapes were translated into English. The English translation transcriptions comprised approximately 180 pages.

The researcher read the transcribed interviews line by line for categories, issues and emerging patterns. Then categories (the constructs) were listed and verbatim quotes chosen from the transcripts which exemplified the essence of each particular category. The computer application Microsoft Access was used to categorize the constructs and also for data entry purposes, and a 'cut and paste' approach was employed to transfer data from the English transcripts into constructs for analysis.

Analysis and comments were developed by cross-checking research questions, interview data and questionnaire results. Conclusions were drawn by comparing the results of the analyses of this research with those from other studies.
3.8 Limitations of the analysis

The research design and its analyses are limited in several aspects. The first limitation lies in the small sample size of two groups of first-year students, limiting any generalization to the situation in other departments in the PolyU, let alone other universities in Hong Kong.

The second limitation derives from the fact that the data on individual students only covered one year. As the study set out to capture the impact of university teaching on the learning approaches of students, a time span of one year may not have been enough to allow a generalization about the changes university teaching may make on students. A solution would be to discover students’ learning approaches again at the beginning of their third year, and again before they graduate from their undergraduate course.

The third limitation is related to the students’ honesty when answering interview questions because of the unequal power relationship that exists between the student interviewee and the researcher interviewer. Students might feel intimidated by questions put to them, and inclined to say what they think the interviewer wants to hear, rather than expressing their real opinions.

Last but not least is the problem of causal ambiguity in finding correlations. Providing explanations and interpretations of research findings is made difficult by the ambiguous causal linkages and directionality of influence, which demands caution in making causal inferences. For example, a student’s perception of the university
environment can be affected both by what the environment is really like and by how
the student has been influenced by that environment. In other words, we cannot be
sure that the interaction between the environment (learning context) and outcome
(GPA and university satisfaction) really explains the change simply because the
direction of causation might well be reversed. This represents the usual chicken-and
egg problem, making it difficult to separate cause and effect when both are inter­
mingled in the students’ experience and their perceptions about outcomes.

3.9 Summary

This study set out to assess and evaluate the impact of university learning on the
approaches to learning adopted by students at the PolyU. Both quantitative and
qualitative methods were used and the reasons for the choice were given in this
chapter. The SPQ developed by Biggs (1992) was used for the two rounds of
questionnaire data collection, with an interval of one year between the first and
second rounds, administered to two groups of PolyU students from two departments.
A quantitative analysis was carried out to compare the learning approaches of students
before and after one year of study and to compare between the two groups.
Correlation analyses were carried out between (i) the three approaches to learning and
the students’ GPA scores and (ii) the three approaches to learning and their degree of
’satisfaction with university experience’.

Semi-structured interviews with students and teachers were adopted for the second
stage of the research to gain some insight into the reasons underlying students’
approaches to learning. Constructs that emerged from the interview data were
cross-checked against results from the questionnaire data as evidence to support, explain and interpret the findings. In addition, multiple research tools and cross-referencing of interviews and questionnaire findings acted as a method of triangulation.

The data collection timetable for the study is summarized in Table 3.6.

Table 3.6  Data collection timetable

<table>
<thead>
<tr>
<th>Time</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 2000</td>
<td>First round of questionnaire administration to two groups of first-year students</td>
</tr>
<tr>
<td>Oct 2001</td>
<td>Second round of questionnaires administration to the same two groups of students in their second year of study</td>
</tr>
<tr>
<td>Oct 01- Dec 01</td>
<td>SPQ data analysis for selection of interview sample</td>
</tr>
<tr>
<td>Dec 01-April 02</td>
<td>Contacting students for interviews</td>
</tr>
<tr>
<td>Jan 02 - April 02</td>
<td>Conducting interviews with students</td>
</tr>
<tr>
<td></td>
<td>Transcribing interview from audio tapes</td>
</tr>
<tr>
<td>April 02 – June 02</td>
<td>Conducting interviews with teachers</td>
</tr>
<tr>
<td></td>
<td>Transcribing interviews from audio tapes</td>
</tr>
<tr>
<td>June 02 – Oct 02</td>
<td>Data entry and analysis of transcribed interviews</td>
</tr>
</tbody>
</table>
Chapter 4: Findings

This chapter reports the findings of this study, i.e. of the impact of university teaching on students’ approaches to learning. The structure of the chapter will follow that of the data collection, discussed in Chapter 3, first reporting on the quantitative results gained via questionnaires (Stage 1), and then on the qualitative results gained via student and teacher interviews (Stage 2).

4.1 Stage 1: Quantitative findings from questionnaires

Stage 1 comprised two rounds of administering questionnaires, the first round was comprised solely of the Study Process Questionnaire (SPQ) developed by Biggs (1992), while the second round was comprised of a short questionnaire as well as the SPQ.

The SPQ was used in a ‘repeated measures’ design, administered to two groups of first-year students at the beginning of the first semester in September 2000 and then again in October 2001. The short questionnaires used in the second round of Stage 1 consisted of seven statements which aimed to find correlations between the students’ learning approaches and their ‘satisfaction with university experience’.

One group of students was enrolled in a degree course in the Department of Hotel and Tourism Management (HTM) and the other in another degree course in the Department of Applied Physics (AP). The number of students in the two courses was 59 (HTM) and 40 (AP) respectively at the start of the first semester in September 2000.
The questionnaires were administered to the two groups of students individually in their normal class periods by arrangement between the researcher and the course teachers. The number of responses to the SPQ obtained in the first round, referred to hereafter as Pre-SPQ, was 43 (HTM) and 25 (AP), and the number of responses obtained in the second round, referred to hereafter as Post-SPQ, was 37 (HTM) and 24 (AP). The lower number of responses in the second round is due to the following: (i) Any student who failed to provide a usable value for the Pre-SPQ was not asked to fill out a questionnaire in the second round, i.e. a Post-SPQ; (ii) some students had dropped out after their first year; and (iii) some students had changed their course of study. Only paired questionnaires were analysed. The number of valid cases available for analysis was 37 out of 59 possible ones in HTM (63%), and 24 out of 40 possible ones in AP (60%).

Table 4.1  Number of valid cases in two rounds of questionnaire administration

<table>
<thead>
<tr>
<th>Department</th>
<th>No. of students</th>
<th>% of valid cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post-SPQ</td>
<td>Pre-SPQ</td>
</tr>
<tr>
<td>Hotel &amp; Tourism Management</td>
<td>37</td>
<td>43</td>
</tr>
<tr>
<td>(HTM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied Physics (AP)</td>
<td>24</td>
<td>25</td>
</tr>
</tbody>
</table>

4.1.1 Learning approaches

The SPQ mean scores have no absolute meaning but can be used for comparison within and between groups, or for correlation with other variables. The results reported in this chapter include a comparison of SPQ means by t-test to determine whether there were differences in the learning approaches within and between the two
groups over one year. Pearson correlations were employed to identify the extent to which the students’ approaches to learning (surface, deep and achieving approaches) are related to their GPA scores and their reported ‘satisfaction of university experience’.

The findings will be considered in the following order: (i) comparing the Pre-SPQ mean scores of the two groups HTM and AP; (ii) comparing Pre- and Post-SPQ scores within two groups; (iii) comparing Pre- and Post-SPQ scores for the two groups; (iv) comparing the number of students classified as surface bias, deep bias or no bias learners in each group; (v) determining correlations between GPA1 scores (Grade Point Average, End of Year One) and Pre-SPQ scores, and between GPA2 scores (Grade Point Average, End of Year Two) and Post-SPQ scores; and (vi) determining correlations between ‘satisfaction with university experience’ and post-SPQ approaches to learning.

4.1.1.1 Mean SPQ scores of HTM and AP students

The table 4.2 represents the Pre-SPQ scores of HTM and AP students. The mean difference between the two groups was compared by t-test.

Table 4.2 Pre-SPQ scores of HTM and AP students

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTM (n=43)</td>
<td>45.56</td>
<td>6.26</td>
<td>0.012*</td>
</tr>
<tr>
<td>AP (n=25)</td>
<td>41.52</td>
<td>6.04</td>
<td></td>
</tr>
<tr>
<td>Deep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTM (n=43)</td>
<td>42.74</td>
<td>6.13</td>
<td>0.154</td>
</tr>
<tr>
<td>AP (n=25)</td>
<td>45.24</td>
<td>8.01</td>
<td></td>
</tr>
<tr>
<td>Achieving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTM (n=42)</td>
<td>41.62</td>
<td>7.76</td>
<td>0.090</td>
</tr>
<tr>
<td>AP (n=22)</td>
<td>45.09</td>
<td>7.46</td>
<td></td>
</tr>
</tbody>
</table>

*Level of significance 5% (2-tailed)
approaches. The HTM group exhibited a significant difference \( (p = 0.012) \) in their surface approach compared with the AP group. On the other hand, the higher scores in both the deep and achieving approaches exhibited by the AP group was not statistically significant.

4.1.1.2 Comparison of Pre- and Post-SPQ scores within the two groups

Mean scores of the HTM and AP students in their Pre-and Post-SPQ were compared by t-test to determine whether there were changes in their approaches to learning over an interval of one year.

Table 4.3 Comparison of Pre- and Post-SPQ scores of 37 HTM students

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>45.57</td>
<td>6.23</td>
<td>0.022*</td>
</tr>
<tr>
<td>Post</td>
<td>43.32</td>
<td>5.35</td>
<td></td>
</tr>
<tr>
<td><strong>Deep</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>42.54</td>
<td>6.39</td>
<td>0.416</td>
</tr>
<tr>
<td>Post</td>
<td>41.49</td>
<td>5.92</td>
<td></td>
</tr>
<tr>
<td><strong>Achieving</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>41.56</td>
<td>8.05</td>
<td>0.382</td>
</tr>
<tr>
<td>Post</td>
<td>40.17</td>
<td>6.36</td>
<td></td>
</tr>
</tbody>
</table>

* Level of significance 5% (2-tailed)

Table 4.3 shows that there was a significant drop \( (p = 0.022) \) in the HTM students' surface approach after one year, but no significant changes in their deep or achieving approaches.
Table 4.4 Comparison of Pre- and Post-SPQ scores of 24 AP students

<table>
<thead>
<tr>
<th>Approach</th>
<th>Pre Mean</th>
<th>Pre SD</th>
<th>Post Mean</th>
<th>Post SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>41.71</td>
<td>6.10</td>
<td>41.29</td>
<td>5.31</td>
<td>0.733</td>
</tr>
<tr>
<td>Deep</td>
<td>45.50</td>
<td>8.07</td>
<td>44.08</td>
<td>8.50</td>
<td>0.137</td>
</tr>
<tr>
<td>Achieving</td>
<td>45.14</td>
<td>7.64</td>
<td>42.24</td>
<td>8.81</td>
<td>0.072</td>
</tr>
</tbody>
</table>

* Level of significance 5% (2-tailed)

Table 4.4 shows that there were no significant changes in any of the three approaches to learning (surface, deep and achieving) by AP students.

4.1.1.3 Comparison of Pre- and Post-SPQ scores for HTM and AP students

In order to see if there were any differences in approaches to learning between the two groups of students, their mean scores of Pre- and Post-SPQ were compared by t-test.
Table 4.5 Comparison of means SPQ scores between HTM and AP students

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Pre-test</td>
<td>45.56</td>
<td>6.26</td>
<td>0.012*</td>
</tr>
<tr>
<td>HTM (n=43)</td>
<td>41.52</td>
<td>6.04</td>
<td></td>
</tr>
<tr>
<td>AP (n=25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep Pre-test</td>
<td>42.74</td>
<td>6.13</td>
<td>0.154</td>
</tr>
<tr>
<td>HTM (n=43)</td>
<td>45.24</td>
<td>8.01</td>
<td></td>
</tr>
<tr>
<td>AP (n=25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achieving Pre-test</td>
<td>41.62</td>
<td>7.76</td>
<td>0.090</td>
</tr>
<tr>
<td>HTM (n=43)</td>
<td>45.09</td>
<td>7.46</td>
<td></td>
</tr>
<tr>
<td>AP (n=25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Post-test</td>
<td>43.32</td>
<td>5.35</td>
<td>0.151</td>
</tr>
<tr>
<td>HTM (n=37)</td>
<td>41.29</td>
<td>5.31</td>
<td></td>
</tr>
<tr>
<td>AP (n=24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep Post-test</td>
<td>41.49</td>
<td>5.92</td>
<td>0.164</td>
</tr>
<tr>
<td>HTM (n=37)</td>
<td>44.08</td>
<td>8.50</td>
<td></td>
</tr>
<tr>
<td>AP (n=24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achieving Post-test</td>
<td>40.54</td>
<td>6.67</td>
<td>0.426</td>
</tr>
<tr>
<td>HTM (n=37)</td>
<td>42.08</td>
<td>8.30</td>
<td></td>
</tr>
<tr>
<td>AP (n=24)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Level significance 5% (2-tailed)

Table 4.5 shows the differences in learning approaches in Pre-and Post-SPQs between the two groups. At the beginning of the first year, there was a significant difference in the scores for the surface approach between the two groups; however, after one year no significant difference between HTM and AP students was revealed in any of the three approaches to learning.

4.1.1.4 Classification of students as surface bias, deep bias or no bias

On the basis of the decile scaled scores (Biggs, 1992, p. 100), students were classified as 'surface bias', 'deep bias' and 'no bias'. This classification was used in Lai and Biggs (1994) as follows:

(iv) Surface bias: Surface decile scaled score greater than deep decile scaled by
(v) Deep bias: Deep decile scaled score greater than surface decile scaled by at least two deciles

(vi) No bias: Remaining students

Table 4.6 Number of students in three classifications of learning bias

<table>
<thead>
<tr>
<th></th>
<th>HTM</th>
<th></th>
<th>AP</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-SPQ</td>
<td>Post-SPQ</td>
<td>Pre-SPQ</td>
<td>Post-SPQ</td>
<td>Pre-SPQ</td>
<td>Post-SPQ</td>
</tr>
<tr>
<td>Surface bias</td>
<td>22 (59%)</td>
<td>24 (64%)</td>
<td>6 (25%)</td>
<td>8 (33%)</td>
<td>28 (46%)</td>
<td>32 (52%)</td>
</tr>
<tr>
<td>Deep bias</td>
<td>5 (14%)</td>
<td>5 (24%)</td>
<td>7 (29%)</td>
<td>8 (33%)</td>
<td>12 (20%)</td>
<td>13 (21%)</td>
</tr>
<tr>
<td>No bias</td>
<td>10 (27%)</td>
<td>8 (22%)</td>
<td>11 (46%)</td>
<td>8 (33%)</td>
<td>21 (34%)</td>
<td>16 (26%)</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>37</td>
<td>24</td>
<td>24</td>
<td>61</td>
<td>61</td>
</tr>
</tbody>
</table>

Focusing on the HTM students, table 4.6 shows (i) that 59% of HTM students (but only 25% of AP students) were surface bias; (ii) that 14% of HTM (but 29% of AP students) were deep bias at the beginning of their first year; and (iii) that the proportions of students in each classification of bias remained roughly the same after one year.

Focusing on the AP students, table 4.6 shows (i) that nearly half of AP students (46%) were no bias learners; (ii) that the proportion of surface and deep learners among AP students was nearly the same at the beginning of their first year (25% vs. 29%); and (iii) that the proportion of AP students in each classification was the same (33%) after one year.
4.1.1.5 Learning approaches and learning outcomes in terms of GPA

The GPA scores of the two groups of students were provided by the offices of the departments through the two teachers who collaborated with the researcher. Each GPA1 and GPA2 was the weighted arithmetic average percentage mark for about twelve course subjects taken in the students' first and second year respectively.

Correlations were determined (i) between GPA1 and GPA2, (ii) between the Pre-SPQ scores and first-year end result GPA1, and (iii) between the Post-SPQ scores and the end of and second-year result in terms of GPA2.

Table 4.7 Correlations of GPA1 with GPA2 scores

<table>
<thead>
<tr>
<th>GPA1</th>
<th>GPA2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HTM</td>
<td>0.966**</td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>0.930**</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.940**</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation significant at 0.01 level (2-tailed)

Table 4.7 shows that for both HTM and AP students, the GPA1 scores correlate highly significantly with GPA2. This means that the GPA scores of individual students did not change much after one year. The results showed that the best predictor of students' GPA score is their GPA score of the previous year.
Table 4.8  Correlations of HTM students’ GPA1 and GPA2 scores with their approaches to learning

<table>
<thead>
<tr>
<th></th>
<th>GPA1</th>
<th>GPA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-SPQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>-0.064</td>
<td></td>
</tr>
<tr>
<td>Deep</td>
<td>0.227</td>
<td></td>
</tr>
<tr>
<td>Achieving</td>
<td>0.236</td>
<td></td>
</tr>
<tr>
<td>Post-SPQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>-0.124</td>
<td></td>
</tr>
<tr>
<td>Deep</td>
<td>0.236</td>
<td></td>
</tr>
<tr>
<td>Achieving</td>
<td>0.320</td>
<td></td>
</tr>
</tbody>
</table>

* Correlation significant at 0.05 level (2-tailed)

Table 4.8 shows that there was no significant correlation between the approaches to learning Pre-SPQ and GPA1, and Post-SPQ and GPA2 in the HTM group.

Table 4.9 shows that the GPA2 and the score of deep approach to learning correlated negatively \( r = 0.458, p < 0.05 \), as did the GPA2 with the score of achieving approach of learning \( r = 0.449, p < 0.05 \). This means that the deep and achieving approaches of AP students were negatively correlated with their GPA scores in the second year.
Table 4.9  Correlations of AP students’ GPA scores with their approaches to learning

<table>
<thead>
<tr>
<th></th>
<th>GPA1</th>
<th>GPA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-SPQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>-0.117</td>
<td></td>
</tr>
<tr>
<td>Deep</td>
<td>-0.246</td>
<td></td>
</tr>
<tr>
<td>Achieving</td>
<td>-0.282</td>
<td></td>
</tr>
<tr>
<td>Post-SPQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>-0.096</td>
<td></td>
</tr>
<tr>
<td>Deep</td>
<td>-0.458*</td>
<td></td>
</tr>
<tr>
<td>Achieving</td>
<td>-0.449*</td>
<td></td>
</tr>
</tbody>
</table>

*Correlation significant at 0.05 level (2-tailed)

4.1.1.6 Approach to learning and ‘satisfaction with university experience’

The study attempted to investigate the possible connection between the students’ approaches to learning and their ‘satisfaction with university experience’. Students’ satisfaction was probed by presenting them with a list of seven statements, for each of which students were asked to indicate the extent of their satisfaction. The seven statements probe (i) teaching in general, (ii) course quality in general, (iii) course structure and organization, (iv) choice of subjects, (v) assessment and workload, (vi) relationship with other students, and (vii) relationship with teaching staff. Students were required to score these on a 5-point scale, from 1 ‘very dissatisfied’ to 5 ‘very satisfied’.
Table 4.10  Correlations of HTM students’ approaches to learning score with their ‘satisfaction with university experience’

<table>
<thead>
<tr>
<th></th>
<th>Surface</th>
<th>Deep</th>
<th>Achieving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching in general</td>
<td>0.118</td>
<td>0.335*</td>
<td>0.445**</td>
</tr>
<tr>
<td>Course quality in general</td>
<td>0.164</td>
<td>0.162</td>
<td>0.184</td>
</tr>
<tr>
<td>Course structure and organization</td>
<td>-0.108</td>
<td>0.195</td>
<td>0.128</td>
</tr>
<tr>
<td>Choice of subjects</td>
<td>0.098</td>
<td>-0.220</td>
<td>-0.263*</td>
</tr>
<tr>
<td>Assessment and workload</td>
<td>-0.052</td>
<td>0.159</td>
<td>0.272*</td>
</tr>
<tr>
<td>Relationship with other students</td>
<td>0.205</td>
<td>0.024</td>
<td>0.144</td>
</tr>
<tr>
<td>Relationship with teaching staff</td>
<td>0.305*</td>
<td>0.257</td>
<td>0.228</td>
</tr>
</tbody>
</table>

**Correlation significant at 0.01 level (2-tailed)
*Correlation significant at 0.05 level (2-tailed)

Table 4.10 shows that students’ deep score correlated with their satisfaction with ‘teaching in general’ ($r = 0.335, p < 0.005$), and that their achieving score correlated highly with their satisfaction with ‘teaching in general’ ($r = 0.445, p < 0.001$). That means that the more deep and achieving learners they are, the more satisfied they are with the teaching in general.

Students’ surface score correlated with their satisfaction with their ‘relationship with teaching staff’ ($r = 0.305, p < 0.005$). That means that the more surface learners they are, the more satisfied they are with their relationship with their teachers.

There were also correlations between students’ achieving score and their satisfaction with ‘assessment and workload’ ($r = 0.272, p < 0.005$), but correlated negatively ($r = 0.263, p < 0.005$) with their satisfaction with ‘choice of subjects’. This means that the more achieving learners they are, the more satisfied they are with the assessment and workload but the less satisfied with their choice of subjects.
Table 4.11  Correlations of AP students’ ‘satisfaction with university experience’ with their approaches to learning score

<table>
<thead>
<tr>
<th></th>
<th>Surface</th>
<th>Deep</th>
<th>Achieving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching in general</td>
<td>0.114</td>
<td>0.090</td>
<td>0.022</td>
</tr>
<tr>
<td>Course quality in general</td>
<td>-0.016</td>
<td>0.112</td>
<td>0.049</td>
</tr>
<tr>
<td>Course structure and organization</td>
<td>-0.008</td>
<td>0.204</td>
<td>0.061</td>
</tr>
<tr>
<td>Choice of subjects</td>
<td>-0.384</td>
<td>0.048</td>
<td>0.025</td>
</tr>
<tr>
<td>Assessment and workload</td>
<td>-0.012</td>
<td>0.057</td>
<td>-0.117</td>
</tr>
<tr>
<td>Relationship with others</td>
<td>-0.288</td>
<td>0.362</td>
<td>0.090</td>
</tr>
<tr>
<td>Relationship with teaching staff</td>
<td>-0.213</td>
<td>0.723**</td>
<td>0.614**</td>
</tr>
</tbody>
</table>

**Correlation significant at 0.01 level (2-tailed)

Table 4.11 shows that there was high positive correlation between students’ deep score and their satisfaction with ‘relationship with teaching staff’ \((r = 0.723, p < 0.01)\), and also between the achieving score and their satisfaction with ‘relationship with teaching staff’ \((r = 0.614, p < 0.01)\). This correlation can be explained by the fact that the more ‘academic’ students had close relationships with their teachers.

4.1.2  Summary

4.1.2.1  Students’ learning approaches and their changes after one year

The findings showed that the two groups, HTM and AP, exhibited quite different learning approaches when they started their university study. The HTM group exhibited a significantly higher score in their surface approach than the AP group, while the AP group’s higher scores in deep and achieving approaches were not statistically significant.
After one year’s study at university, there was a significant drop in the surface approach scores of the HTM group, and a slight drop in the deep approach scores for both HTM and AP groups. Comparing the two groups after one year at university, there was no significant difference between two groups of students in all three approaches to learning.

4.1.2.2 Correlation of learning approaches with (i) outcomes of learning and with (ii) ‘satisfaction with university experience’

One of the finding concerning GPA scores was that the GPA1 was highly correlated with GPA2 for both groups of students, which suggests that the best predictor of students’ GPA score is the GPA score of their previous year.

The use of learning approaches to predict the GPA was less satisfactory, which may be due to the shortcomings of the GPA as a measurement of outcome of learning. Since the GPA1 (Year 1) and GPA2 (Year 2) are the weighted arithmetic average percentage mark for about twelve subjects taken in first and second year respectively. This may have had the effect of masking any effects of individual difference since it is possible that high scores in some subjects were outweighed by low scores in other subjects.

The use of learning approaches to predict ‘satisfaction of university experience’ was less satisfactory. However, one interesting finding was that while in the HTM group it was the surface learners who were more satisfied with their ‘relationship with teaching staff’, in the AP group it was the deep and achieving learners.

The quantitative findings provided useful data and background knowledge about the
approaches to learning adopted by the two groups of students, and the differences between the two groups after one year of study. However, the findings need to be interpreted with some caution because of the small sample size.

4.2 Stage 2: Qualitative findings from student and teacher interviews

In Stage 2 interviews were used to probe the contextual factors that might influence students’ approaches to learning. Besides students, teachers were invited to be interviewed in order to discover their conceptions of teaching, their teaching practices, and their views of their students and their subjects.

Between January 2002 and June 2002, interviews were conducted with a total of fourteen students and six teachers from the Department of Applied Physics (AP), and fourteen students and seven teachers from the Department of Hotel and Tourism Management (HTM).

The selection of students for interviews was based on their results in the Pre-SPQ and Post-SPQ regarding the learning approaches taken by them. First students were classified as ‘surface bias’, ‘deep bias’ and ‘no bias’, and then divided into two groups, a ‘change’ group and a ‘no change’ group. Table 4.12 gives the actual number of students interviewed in each category.
Table 4.12 Actual number of students interviewed

<table>
<thead>
<tr>
<th>Approaches of learning</th>
<th>No. interviewed</th>
<th>Total no. interviewed</th>
<th>Total no. in category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AP</td>
<td>HTM</td>
<td></td>
</tr>
<tr>
<td><strong>Change group:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface bias to Deep/No bias</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Deep bias to Surface/No bias</td>
<td>1*</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>No bias to Surface/Deep bias</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5</td>
<td>8</td>
<td><strong>13</strong></td>
</tr>
<tr>
<td><strong>No Change group:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface bias to surface bias</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Deep bias to Deep bias</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>No bias to No bias</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td>6</td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

All students interviewed had participated in both rounds of the questionnaire data collection. The proportion of students actually interviewed out of the total number in the category of the ‘Change’ group (thirteen out of twenty-three) was 57% and the ‘No change’ group (fifteen out of thirty-eight) was 39%.

All the interviews were conducted and transcribed by the researcher. Issues that the researcher found important and relevant for the study are reported in the following sections. A synthesis of the quantitative and qualitative results and a conclusion will be presented in Chapter 5.
4.2.1 Qualitative findings from student interviews

Learning approaches

Both AP and HTM students adopted similar learning approaches. In their lectures nearly all the students mainly jotted down notes and listened carefully to the lecturer, seldom asking questions. There was a difference in behaviour in the tutorial sessions due to the nature of the courses, with AP students mostly doing calculation exercises while HTM students engaged mainly in discussions.

After class, both AP and HTM students usually went through their lecture notes and the prescribed readings given out by the teaching staff. AP students spent most of their study time doing ‘mathematical exercises’ in order to master the concepts in most of their major subjects, such as Modern Physics and Mathematics for Scientists & Engineers. HTM students spent most of their study time doing project work and going through assigned readings to gain an understanding of the principles of accounting, marketing and human resource management.

When students did not understand something about their subjects, six AP students and three HTM students preferred asking their classmates for help first and approaching their lecturers later.

Two AP students found the programme covered too much theory, and both were doubtful about the usefulness of learning these theories in their future careers and daily lives. One AP student found some subjects too ‘academic’ and too ‘theoretical’, failing to relate to real situations, and also failing to help develop critical thinking
skills. Another AP student was disappointed to discover that the programme was very superficial. He expected to acquire in-depth knowledge and advanced skills in his subjects.

Students expected the HTM programme to be very practical because it was designed to serve as vocational training for middle managers and managers in the field. However, two HTM students found that the programme was not practical enough. One HTM student felt very disappointed after her job placement at the end of first year, in which she realized that what she had learned at university could hardly be applied to the reality of the job. Two students found that some topics, such as human resources management, overlapped in many subjects.

The following discussion will consider some of the issues, identified in the analysis of the transcripts, which are important to an understanding of the reasons for particular approaches to learning having been adopted by students, and for any changes made by them to their approaches to learning. The issues will be considered in the following order: (i) workload, (ii) assessment, (iii) perception of good teaching and good teachers, (iv) relationship with teaching staff, (v) change in students’ learning approaches over one year, (vi) suggestions from students.

Each quotation is followed by an identifier with four components:

- Department (either AP or HTM)
- Interviewee (either S = Student, or T = Teacher)
- Interviewee Number
- Change in student’s learning approach ($D \rightarrow S$ = deep bias to surface bias, $S \rightarrow N$ = surface bias to no bias, etc.)
For example, AP: $S10 \ (D \rightarrow S)$ stands for quotation from AP Department (Applied Physics), student no. 10, whose learning approach changed from D (deep bias) from the beginning of the first year to S (surface bias) in the second year; while HTM: $S11 \ (S \rightarrow N)$ stands for quotation from HTM Department (Hotel and Tourism Management), student no. 11, whose learning approach changed from S (surface bias) from first year to N (no bias) in the second year.

4.2.1.1 Workload

In Year One, both AP and HTM students had to take about twelve subjects. While the workload varied in the different subjects of the two departments, it was found in the interview that overall the workload for AP students was heavier than for HTM students.

Applied Physics (AP)

Many AP students complained in the interviews about heavy workload and pressure in the programme. In addition to class contact hours, they needed to spend a lot of time working on their assignments and laboratory reports. Because of the high demand of the programme, many students claimed that they had insufficient time to meet all their deadlines and study all their prescribed readings.

"It's impossible to submit one report every week. It's too demanding. Besides, we didn't understand it. What we didn't understand accumulated as time went by... We didn't have enough time to finish all the assignments. So, finally, we might copy the computer program from other classmates. It's not that we didn't want to learn. But we really didn't have the time."

AP: $S1 \ (S \rightarrow N)$
"I can see everyone still working hard on the lab report until 3-4am."
AP: S7 (N→D)

"We're overwhelmed by too many exams...There are so many assignments and tests for every subject."
AP: S14 (S→N)

Many AP students said that fourteen weeks in one semester was not enough to cover the syllabus of most subjects. In light of this, one student suggested that the curriculum be revised so that students could learn better and more deeply.

"I think 3 years are too short. It is overloaded even though there are only fifteen credit points in this semester, that is five subjects."
AP: S2 (S→S)

Even some of the deep approach learners among the AP students found that the course covered too much material for them to cope with. The following student AP:S10 would prefer the amount of content in each subject to be reduced.

"I think it's useful to learn more about theories. In this course, all subjects teach lots of theories. That's good. However, there are too many that we can take anymore. I suggest to reduce the amount of materials of each subject. It's not necessary to learn so many things. If this subject is about polymers, then this subject teaches all the things about polymers. They can later add another subject as a sequence to it. By doing so, we know it more in-depth. I suggest them to make the course narrower and deeper."
AP: S10 (D→D)
Hotel and Tourism Management (HTM)

On the other hand, the HTM students found their workload acceptable and they did not have any difficulty in meeting deadlines. They said that they had sufficient time to read through the core material and even extra readings throughout the semester. Most HTM students found the programme was easy to follow.

"[I] don't spend more time on studying than before."

HTM: S1 (S → S)

"[The course requirements and the workload are] not demanding."

HTM: S10 (N → N)

"[The workload] is OK."

HTM: S7 (N → S)

"[The workload] is OK."

HTM: S9 (D → D)

However, a few students started to find out that their workload was getting heavier as they proceeded to the second year of their study.
"This semester (second year the second semester) is very tough. We have seven subjects in this semester. The assessment method of two of them (Wine Study and Research Methods) is continuous assessment. It's a bit tough though it's fun. For Wine Study, we have to work with peers from other courses so it takes time to match our schedules and such and such. For Research Methods, we have a paper which weighs 25% of the total mark. In other words, we have to work very hard and we will get very busy..."

HTM: S11 (S→N)

4.2.1.2 Assessment

First, it was found in the interviews that AP students were more concerned about grades than HTM students. Second, a big difference was noticed in the weighting of final exams between AP and HTM. The weighting of final exams was 70% for most of the AP subjects while it was 40% for most of the HTM subjects. In addition, while almost all AP subjects had final exams, only some HTM subjects did.

Applied Physics (AP)

It was found that assessment and exams dominated a lot of the AP students' learning. Students did not have enough time, especially at the end of the semester, to complete their assignments and revise, so a number of students eventually chose to memorize the material as much as they could for their exams. They saw this approach as a very useful one for them.
"I study mainly for the exams. Even though I have something that I don't understand, I would memorize it for the exams."

AP: S5 (S→S)

"I tend to memorize them (subject material) if I do not have enough time."

AP: S2 (S→S)

"I find that the final exams rely too much on memorization."

AP: S14 (S→N)

The phenomenon of memorization applied not only to surface learners but also to the deep learners who may not have wanted to memorize but found that the exams demanded this of them in order to get high grades.

"Grades are very important here while most subjects rely on memorization."

AP: S4 (D→D)

"Since I didn't have a thorough understanding of this subject, I memorized the materials for the exams."

AP: S9 (N→D)

To prepare for their assessments, eight (57%) AP students said that they studied past exam papers carefully. They claimed that they could 'forecast' the exam questions from past exam papers as they learned the patterns of exam questions which had been repeated over the years. Five (38%) AP students also had a habit of reading previous assignments because, as they said, this helped them to refresh their memories of the theories, principles and concepts of their subject. Additionally, some lecturers gave
‘tips’ to the students in order to help them pass the subjects.

"The exam questions of some subjects are similar to those in the past papers and previous assignments. For some subjects, you should have no problem in the exams if you read the past papers."

AP: S4 (D→D)

One AP student even said that the assessment mode encouraged him to memorize the notes given by the teacher, i.e. that it encouraged him to use a surface approach in learning.

"...I don't think the exams can really assess anything. If you memorise all the notes, you know how to answer the questions. If you answer the questions in your own words, the lecturers would not give you high marks because your answers are not the same as the notes..."

AP: S1 (S→N)

Hotel and Tourism Management (HTM)

In some HTM subjects there were no exams and the students were mainly assessed by their performance in operational skills such as Front Office and Housekeeping. Six (43%) students expressed their view that passing exams was not the main focus of their learning, and two (14%) HTM students stated that the final exams failed to assess what they had learned in the subjects. None of the HTM students interviewed complained that they had too many assignments and exams.
4.2.1.3 Perception of good teaching and good teachers

Almost all of the AP students interviewed, but especially the deep learners, paid their respects to their teaching staff and regarded their teachers as their seniors and friends. They favoured teachers who showed their concerns about their academic performance as well as their personal development.

"Dr A is friendly and he cares about his students."
AP: S3 (D→D)

"Prof B makes us aware of our responsibility of being a student."
AP: S4 (D→D)

"Dr C is very nice. He really cares about his students. He actively approaches us and asks how we are doing. He also answers all of our questions. He's friendly. We talk about daily life. He still remembers my name even after a year. He's like my secondary school teacher. He doesn't mind answering our calls even in midnight."
AP: S7 (N→D)

Many AP students, especially the deep learners, respected and admired knowledgeable and brilliant teachers. They were enthusiastic about approaching this kind of teacher to discuss knowledge and wanted to learn and follow their thinking patterns.
“Dr D is knowledgeable. He makes me understand. When I ask him, he can explain and make me understand.”

AP: S14 (S→N)

“Prof E gives us a guarantee that he can answer all of our questions...throughout the whole class, he derives all the things himself. He’s so brilliant. He’s very clear with all the theories and concepts. He can answer any of our questions immediately. We have an impression that he’s an intellectual person. Since he’s this type of person, he’s able to provide a very good learning atmosphere for discussion.”

AP: S4 (D→D)

“...Prof Z doesn’t mind spending over an hour to help us and give me extra information on something that we should learn...”

AP: S7 (N→D)

Hotel and Tourism Management (HTM)

HTM students tended to favour the teaching style of teachers who made the class interactive and interesting.

“Dr X makes the class interactive by asking questions.”

HTM: S3 (D→N)

“I like something more dynamic, more about everyday life.”

HTM: S4 (N→D)
"...He elaborated the material with a lot of real life examples. In the class, he highlighted the key points and gave us many activities to do. He made us very attentive to his class..."

HTM: S3 (D→N)

They also appreciated it very much if the teachers shared their previous working experience in industry and related that to the lecture materials.

"Her class isn't very special. What makes her class special is she uses her experience to explain the key points."

HTM: S1 (S→S)

4.2.1.4 Relationship with teaching staff

Applied Physics (AP)

Five (36%) AP students found that the teaching staff cared about the students and took the initiative to identify any difficulty in their learning and personal development. Some AP students tried to work harder to show their appreciation of their teachers. However, two (14%) AP students disagreed with them and found their relationship with the teaching staff was very detached.

"If the teacher is nice to us, we are respectful to him and disciplined ourselves in the class."

AP: SI (S→N)
"There's nothing special about his teaching. But he's very nice. He still cares about his students after class... Other than teaching, he makes us work harder to thank him. We feel guilty if we don't perform well."

AP: S3 (D→D)

Hotel and Tourism Management (HTM)

On the other hand, three (21%) HTM students observed that the relationship between students and the teaching staff of their programme was pretty good. They commented that the teaching staff was nice and willing to answer their queries.

4.2.1.5 Change in students' learning approaches over one year

When asked whether they changed the way they studied after one year's studying at the PolyU, eight (57%) AP students and seven (50%) HTM students said yes. Most AP and HTM students found that they started to think more deeply about their subjects, and said that this had been inspired by some of the teaching staff. Of these students, most said that they were encouraged by their teachers to think more widely and deeply about their subjects.

Applied Physics (AP)

Four (29%) AP students said in the interviews that their programme disappointed them. Before they came to the university, they imagined that this would be a place of more freedom and more 'space' for them think. As they spent more days in the university, they felt very disappointed to discover that the learning environment and
assessment in the university were no different from those in their secondary schools.

"Some subjects are quite interesting but most subjects are very boring. It's like studying at secondary school."
AP: S5 (S→S)

"The system here is similar to the one in secondary school. Exams play a very important role."
AP: S12 (S→S)

One student said that the teaching in some subjects encouraged her to take a surface approach in her learning.

"I want the teachers to explain where goes wrong. However, they just correct it and then ask me to study it myself. They don't give me space nor guide me to think about my mistakes. They just ask me to compare my work with the correct one to see the difference. But I would like to know what goes wrong. Am I thinking correctly? Or am I using wrong words? I need to take this kind of subjects in two semesters and I don't think I get anything good from it. Gradually this encourages me to look at my peer's answer to check if I'm doing right instead of thinking seriously about my answer."
AP: S1(D→S)

For some students, the course was still exam-oriented, and they continued to use the learning strategy they used in secondary school.

"Here I adopt the strategy that I used in F4 & F5. Here I find that most subjects rely too much on memorization."
AP: S14 (S→N)
"...the lecturers are devoted to teach us. But I also feel that they are too devoted to give us a lot of homework to do. I feel that I’m still in the secondary school education."

AP: S9 (N→D)

There was evidence that some AP students made a positive change in their attitudes to learning and become more intrinsically motivated to learn.

"After class, I would think about the people around me. I would try to see why they behaved in such a way.... I think General Education subjects can really make me think broadly about the world."

AP: S7 (N→D)

"I would read more about this subject if I’m more interested in it. I’d read more to make me fully understand even though no one asks me to do so. The main impetus is interest."

AP: S9 (N→D)

Hotel and Tourism Management (HTM)

Most HTM students noticed that they became more active in learning in terms of searching for information. Most HTM students said they had changed their conception of learning after one year’s studying at the PolyU.
“In the past, I might just read the textbooks. And now, maybe I learn to take a broader view of thinking. My major study is hotel management and the class makes me take a global view on certain issues and I’m no longer just focusing on Hong Kong. These issues are usually influenced by a number of surrounding factors. There are hotels at different levels. The ways they serve their customers are depending on what classes they belong to. My teachers always highlight this point. As a result, I pay more attention to this area. Besides, I often need to seek information on my own because the information on the handouts or the lecture notes is not enough for me to complete a certain task. So, I go to the library to seek for more references, e.g., journal articles, in order to help me to complete the assignment or whatever.”

HTM: S2 (S→D)

“In the past, I memorized the material without any understanding. Now I try to understand what they are about...”

HTM: S11 (S→N)

“...in Leisure Behaviour we couldn’t study without reference, because we didn’t get anything from our teacher. To be survived we can only by ask more and read more. And now the exams start to have long essay not just short question. We have to read and understand the text before write them out...I learned how to find information by myself. Especially the subjects, which have projects and papers...”

HTM: S4 (N→D)

4.2.1.6 Suggestions from students

Applied Physics (AP)

Curriculum

(i) The programme should teach more about interpersonal relationships, problem solving, critical thinking and analytical skills. (two students)
There should be less content in some subjects. (two students)

Subjects should be taught more deeply and narrowly. (two students)

The department should establish more collaboration with industry or research centres. (one student)

Placement in industry would be useful to apply the theories learnt. (1 student)

The General Education subjects can broaden students' thinking about the world. (1 student)

Teaching

The lecturer should explain the learning materials more clearly and in more detail so that students would gain a better understanding of the subjects. (two students)

Teachers should give the responsibility for learning back to the students as students can learn better by themselves. (three students)

Teachers could set group projects which would allow students more freedom in their learning. (four students)

Assessment

The present weighting of the exam for the final grade (70%) should be reduced. (three students)

The number of exams should be reduced. (four students)

The exams in some subjects should be replaced by project work. (three students)

Hotel and Tourism Management (HTM)

Curriculum
(i) The programme should be more ‘specific’; it should have more subjects related to hotel management instead of general business management. (two students)

(ii) Some management topics are repeated in some subjects again and again, such as Organizational Theories. (three students)

(iii) Objectives of the subjects and topics should be explained clearly at the beginning of the semester; students did not understand the reason for studying the subjects / topics. (two students)

(iv) The programme should teach more about critical thinking and analytical skills. (one student)

Teaching

(i) There should be more interactive lessons. (two students)

(ii) Lecturer xyz (named) should do something during his lecture to find out whether the students understand what he is talking about. (four students)

(iii) Some lectures can be replaced by project work; student thinks that he/she can learn more by doing projects than by attending lectures. (one student)

Assessment

(i) Final exams can be replaced by group projects. (three students)

(ii) Projects can truly assess the ability of students. (two students)

(iii) Group projects are better than individual projects since they allow more exchange of ideas and provide another channel for learning essential skills such as leadership skills, teamwork, communication and cooperation skills. (two students)
4.2.2 Qualitative findings from teacher interviews

From April 2002 to June 2002, six of the teaching staff from the Department of Applied Physics (AP) and seven from the Department of Hotel and Tourism Management (HTM) were invited for interviews. They were the teachers who had taught the students in their first year. The questions asked were semi-structured. All interviews were conducted individually in the teacher's office. Teachers were allowed to develop their views along the lines that they felt were important and to reveal their perspectives as much as possible. All interviews were audio-taped and transcribed.

The following discussion will consider some of the issues which are important to the understanding of the contextual influences to the learning approaches of the students. The issues will be considered in the following order (i) teaching approaches, (ii) assessment, (iii) rote learning / memorizing, (iv) relationship with students, (v) students' motivation, (vi) views toward their subjects, and (vii) English as medium of instruction.

4.2.2.1 Teaching approaches

Applied Physics (AP)

It was found that most AP teachers adopted traditional didactic teaching methods in lectures, and most explained their lecture notes using overhead transparencies or PowerPoint slides, and demonstrated how to prove equations using the whiteboard. If time allowed, they would raise some questions for students to think about as well as to get their attention. As for the tutorial session, teachers did exercises with students and
asked questions to discover what students did not understand. In some subjects, they
taught laboratory skills and computer programme applications.

Although some AP teachers explained that they tried hard to make their classes more
interactive by raising questions, students hardly gave any response.

"...in the class I always ask them questions. However, most of the time I
answer them myself. I don't know. Students are not used to answer
questions. Maybe they're afraid that they give the wrong answers. So I
answer the questions almost every time, and that could slow the pace
down a bit."
AP: L4

"In recent years, I hardly find them active in raising questions. To avoid
wasting the time, I use it to explain examples or give them exercises."
AP: L2

Because of tight schedules, the AP teaching staff found the time allocated insufficient
for them to cover all the things in a module that they were supposed to cover within
fourteen weeks. One teacher prepared interactive handout from readings for students,
which aimed to help students cover the large amount of content required in the
subject.
"These notes are not in full detail because in this subject we need to cover many chapters and readings. If I ask them to read the books, the students don't know where to start. So, I prepared these notes for them. In the notes, there are some activities for them to do so as to make the class interactive. But only for Optics. We don't have time to do so for Physical Optics..."

AP: L4

In addition to the tight schedule, AP teachers in general also complained that the standard of their students was low, and that it did not allow them to teach the required standard of the subject or teach students more deeply in some subjects.

"...the overall standard of the Physics students over the world is lower than before. If we teach something deeper, almost all students find it hard to follow. The standard of our students is not very high. They are limited by their mentality. From my point of view, not everyone can study Physics."

AP: L2

Hotel and Tourism Management (HTM)

HTM teachers used various teaching methods to help them to teach different topics. Besides giving lectures and tutorial sessions to their students, HTM teachers took their students to hotels, restaurants or travel agencies for site visits. HTM teachers also taught their students by adopting the perspectives of different groups of people through role-playing, video shows and playing games.
"Within these 14 weeks, I try to use different kinds of approaches like video show, role play, field trip, etc. to keep them feeling new and interested.... I think role play is better than video show. So, it depends on the topic and the availability of resources.... I think video is less effective. Students easily get distracted or sleepy when I play the tape. They also fail to remember the key points. I find that they like field trip the most."

HTM: L7

"We sometimes play games. We also have in-class quizzes and role-playing. Certainly we have one-way communication in lecture. In tutorial, we have group discussions."

HTM: L6

"I take them to the Shangri-la and show them different bars so that they get something to see. And I force them to go to somewhere else."

HTM: L4

In some subjects, people working in the hotel, catering or tourism industry were invited to give talks to the students.

"Some guests from the hotel industry are invited to give a lecture to our students to tell them the trend and new development in the industry. I also use videos to show them the actual happening."

HTM: L2

"Some people are invited from the industry like wine sales, some are English speaking and some are Cantonese speaking."

HTM: L4

At the end of their first year, all students had to undertake their job placements for ten to twelve weeks. Teachers make use of the placements to let students do group work
in order for them to develop different skills, such as communication skills and teamwork skills, and to make them learn in different ways.

“In the summer, students have to go out for their placement. After they’ve worked for one summer, they see what they can use from what they have learned. Maybe they start thinking differently because you push them to go the library to collect data and there’re a lot of group works. We make them to learn in a different way. If I (student) have explained to you (student), I learn much deeper than I just go to read the books. I’m sure that helps too...”

HTM: L4

One teacher often made use of more experienced part-time students, getting them to mix with full-time students in order to teach the less experienced full-time students.

“I have all full time students plus a few part time. So I try to put some part time students in each group to learn from each other. They can learn more from each other than from me, right?”

HTM: L4

In lectures and tutorials, HTM teachers try to engage their students and make their classes active, trying every means available to motivate the students to participate in class.

“Quite often I make them to discuss something. If I see them sleeping. Then I say, ‘OK, groups of 5, to write something out.’ I make them to present something. So I make them to learn from one another. So I can know what they’ve known already and add what they haven’t known instead of acting you do nothing...”

HTM: L4
"For tutorial and sometimes in lecture, I try to make it more relaxing so that the students feel more comfortable doing the exercises or answering questions....We have group discussions and exercises. By exercise, I mean to give them a topic, let say, to determine the type of evaluations. I would then invite some students to give me their answers. After that, we would have a discussion together."

HTM: L5

The adoption of a student-centred approach in teaching by HTM teachers can be explained by the educational background of the HTM teachers, and by the fact that their course was more service-oriented, as well as by the fact that there were more Western teachers in their department.

"Then I think in our Department, we have a lot of Westerners compared with other departments. So we want our students to be deep learners. We want them to talk back. So we push them. Overall, most of our staff has worked in the hotel so that make us more out-going. We don’t like them to sit down and we try to engage them more. And I think a lot of my colleagues have done a second or third degree in teaching and learning. So they all know they have to look at deep learning instead of surface learning. Most staff in our department know."

HTM: L4

One HTM teacher (who was complained about by three students in interviews) would try to introduce a new approach, under which students were expected to think out concepts through thinking aloud in class. However, students did not appreciate this approach to teaching. The teacher found that students were too concerned about the teacher’s notes in class because of exams. Teachers claimed that students did not like to think much and participate, and that they were very dependent on their teachers for
learning.

"They're not interested in the content of the subject. They didn't really want to know anymore that's absolutely unnecessarily to pass the year (final exam). That makes it a bit discouraging to teach people like that. But I try a new approach that's a new approach for Hong Kong. I'm not good doing it again these students seem don't appreciate it. ....I think it's because the students are eventually exam-oriented. I think it's because it challenges them too much that they have to think, they have to listen, they have to show up in the class, and then they have to give explanations. What the most students here want is to pay attention the PowerPoint and this PowerPoint should hopefully be used directly in the exams. It's not very satisfactory."

HTM: L1

4.2.2.2 Assessment

Applied Physics (AP)

Four (67%) AP teaching staff gave their students exercises and assignments to assess their understanding of the subjects. One teacher gave the students five or six short quizzes in a semester, of which the four best were counted towards the final grade for the subject. He explained that this addressed the problem of copying answers in assignments. Another teacher gave students mid-term tests as a form of continuous assessment. Regarding exam questions, only one of the AP teaching staff said that he gave the students questions which required them to think and analyse.
“...this is a large class that it's impossible for everyone of them to do the presentation and it's hard to know who is better or worse. It's also very hard to know their standard from their homework because they copy from each other. To cope with this, I use quiz to assess their ability.”

AP: L1

Hotel and Tourism Management (HTM)

Seven (50%) HTM teaching staff gave their students projects to work on as a group; four gave them tests; and two asked them to give oral presentations on their projects. In two subjects, students had to go out and conduct interviews with personnel in the hotel, catering or tourism industry. One teacher counted class participation towards the assessment although only weighting it at 10%. In another subject, the teacher asked the students to make cocktails and video-taped what they did so that they could improve their skills and learn from each other. Most of the assessment was of whether students could apply their knowledge and their operational skills.

"We have guidelines. We usually assess their knowledge and applications. Out of our marking scheme, we give marks for creative answers. The total mark for knowledge is 60%. We don't emphasize memorization. If they only memorize the materials without any understanding, they only get a C at maximum. They would get a higher mark if they show that they can apply."

HTM: L2
"They have to go to the bar and interview the owner to find out for example the Mexican theme, how they carry out the theme, how they create the atmosphere and make the food and drinks so they need to look at the service style and get the recipe, etc. So they have to go out for 2 or 3 times to get this information. They have to write it out as a few references."

HTM: L4

One HTM teacher was suspicious of the fairness of the group project. And while he found difficulties in assessing the abilities and involvement of individual students in group work, he still thought group projects benefited students more than individual work because working in teams is very important in the industry.

"If you do nothing in the group, you can have an A by doing nothing. But then you can learn from each other. If it's an individual work, you can know everybody has learned something. But then they don't know how to do group works."

HTM: L4

4.2.2.3 Rote learning / memorizing

Applied Physics (AP)

Teachers in AP were aware that students liked to rote learn for exams, and some AP teachers found that many of the weaker students tried hard to memorize because their foundation was weak.
"Perhaps their foundation is not strong enough. Actually they don't have to memorize the formula. Before the exams, they are given a card on which they are allowed to write down anything they want. They can bring this card to the exams venue. I find that it doesn't help the weak students at all. They write a lot of useful things on the card but they don't know how to use them to answer the exam questions. They don't have good memory and they don't have comprehension skills."

AP: L4

"I take a role to change their study habit. These students are used to memorize. Most of them are not well prepared to study in the university. They memorize it if they don't understand. I tell them it's not the right approach to Physics. They should understand it and know how to use it..."

AP: L2

In fact, as some AP teachers were aware that many of their students liked to rote learn for exams, they were thinking of using open-book exams.

"Different subjects have different situations. ... for the exams of those subjects requiring the students to memorize a lot, we plan to make them open-book exams. The reason of this change is to stop them from memorizing. The most important thing is they know how to use the materials. In my subject Electricity and Magnetism, ..I have told them very clearly that they don't need to memorize anything for the tests and exams. I just need them to understand."

AP: L3

There were still a few AP teachers who considered memorization was a basic step in learning and good practice in understanding.
"Memorization is a basic step. There's something that you need to memorize before you're going to understand it, right? If you don't know the definition, you wouldn't know what it is about. Secondly, you can't write out the laws and principles in your own words because they are written in the most precise wordings. If you write in your own words, there must be some mistakes. This is very basic.

AP: L4

"In this subject, students have to learn different types of metals and ceramics. The basic thing they need to do is to know how to differentiate this type from another. The first step is therefore to remember the characteristics and definitions of each type of metals and ceramics. In other words, this is a foundation subject in which students have to remember certain things.... In this major, there're actually many things they need to memorize."

AP: L2

**Hotel and Tourism Management (HTM)**

Some HTM teachers also required students to memorize things but not to rote learn.

"For some basic knowledge they need to memorize. Since I'd prefer using objective questions that require students to give standard answers, they might need to memorize something to answer these questions."

HTM: L7
"Wine is like learning Chinese characters. We have to learn a lot of characters to write a sentence. They have to have some basic knowledge of different wines and regions. For example, they don't know where Bordeaux is so they have to remember like history. There're something they have to memorize but I focus more on making them not so afraid of wine and making them to be able to taste and go out to order a bottle of wine. In the future, when they work in the hotel they look at the wine list and they can make their own wine list. The book is always there for checking. It doesn't rely too much on memorization. There're only multiple choice questions I'm using to make sure they have read everything."

HTM: L4

4.2.2.4 Relationship with students

Applied Physics (AP)

Most AP teachers proactively built a close relationship with their students. They did not just teach them knowledge of their subjects but also how to be a good person. It was very interesting that some AP teachers were inclined to teach their students a positive learning attitude by telling them Chinese fables and maxims. When some AP teachers discovered that their students had a problem or difficulty, they would call them in for a meeting to explore their problems and seek solutions together.

"I treat them as my sons. I see my students more often than my family... I always tell them what is right and what is wrong."

AP: L4

"We also want them to be more independent and not to seek for short-cuts... I always tell them to be an honest student or person."

AP: L5
"Sometimes I tell them 'it just takes a few years. If you don't work hard now, you would regret what you've done.'"

AP: L3

Hotel and Tourism Management (HTM)

HTM teachers found it very hard to follow up with individual students in the first year. As they explained, most subjects that the students took in Year One were common core subjects which were not taught by the HTM teaching staff. As a result, the relationship between them in the first year was unlikely to be close. However, the teachers were encouraged by their department to participate in students' activities in order to know more about them.

"As for the degree course, students have to take some common core subjects in Year One. Most of these subjects are business subjects... They don't have many chances to meet our staff. Therefore, their sense of belonging is weaker... In our department, we have a student society in which most of the members are our students. We have a lot of functions where most of the teaching staff is invited to improve our relationship with our students. There are many site visits and games that the teaching staff also comes along. Everybody gets close with each other..."

HTM: L2

4.2.2.5 Students' motivation

Applied Physics (AP)

Many AP teachers complained that their students had low motivation to learn. They considered that most of their students only aimed to pass the exams and get a degree.
They claimed that the students did not come to the university for the sake of learning, and as a consequence did not make enough of an effort in their studies.

"I find that the students don't have motivation in learning. It's been a long history that these students mainly aim to pass the exams and then get the award. They take this award to get a job or further their studies. If they just aim to pass the exams, I don't see them learning at all.... Physics is not only descriptive. Rather, it's a qualitative science. They are expected to write out the ideas in a mathematical form. But they seem uninterested in it. To solve this problem, I usually start by telling them the ideas to motivate some of them."

AP: L5

"They don't have much motivation in studying. They're short-sighted.... In recent years, it's very easy to get a place in the university. Besides, these students haven't come across with any hard times before.... There're not many ways to make them change."

AP: L3

"In these 2 years, the learning atmosphere of the degree students is not very good. They're unmotivated to learn. Over half of the class don't come to the 8:30 am class."

AP: L2

Most AP teachers considered their students were not working hard enough, and were in fact lazy, and one teacher found that the hard-working AP students were influenced by their peers and afraid to let them know that they worked hard.
"...They need to understand what I have taught them especially the principles and concepts... Most students have a problem that they don't do the exercises. They just read the solutions. ... I attribute that to their negative learning attitude. They copy from each other and they think they understand after reading the solutions. Some of them work very hard but not hard enough. ...They are greatly influenced by their peers."

AP: L1

"I had a class in which we had some hardworking students and we also had some students trying to disturb them. Most of us have found that our students form circles amongst themselves. If they don't join, the others would isolate them. I'm sure it has been happening for a long time. Some students told me that they would never let the others know that they worked hard; otherwise their peers would laugh at them. This is a bad influence."

AP: L1

Many AP teachers found that a large number of their students were not mature and confident enough to solve problems on their own. Many AP students sought help from their peers and the teaching staff once they encountered a problem. The teachers thought that they were too dependent, and that they should be more independent in their learning.

"They come to see me almost after every class. To be frank, it's not a good way to learn. They should think about it first before asking for help. If they think, they would not have so many things to ask about. However, these students get good grades. They're very active in learning. Perhaps, they ask people for help because they're not confident enough. If they're confident enough, they can solve problems by themselves."

AP: L3
Most HTM teachers considered their students to be interested in their study and foresaw that students would be more motivated to learn after their placement. Many HTM teachers tried various ways to motivate students even though they thought students were not active enough in their learning.

They’re still examination-driven. After a year, their horizon is widened so they become interest-driven. They study for the pursuit of knowledge instead of passing the exams.

HTM: L7

“ In the class, I often use examples from our daily life to them easier to understand the concepts.... If I’m going to talk about destination, it’s about decision process. If the students haven’t experienced this before, I’d ask them to think about how they make their decision on buying a coke. Since they’ve experienced this kind of decision making before, they feel easier to understand the concepts in this way. This also makes them participate more.”

HTM: L5

The teachers enjoyed the subjects themselves and thought that students should have fun in learning the subjects.

“Food and beverages are always fun. We all like to eat we all like to drink. But by doing it I give them empowerment to do it and enjoy it and then they will be the managers if they like. I try to make it fun. I think this should be fun.”

HTM: L4
One of the HTM teachers complained about the poor learning attitude of his students, saying that students did not like to read books in general, and that they just wanted to be ‘spoon-fed’. (This was the teacher who was complained most about by students in the interviews.)

"....Fundamentally, they want to be spoon fed. Everything is nicely presented so that they don’t have to do much reading. To give you another example that the subject that I’ve just finished teaching. It’s very difficult to get a textbook. The textbook is very expensive and it costs over $400 in Hong Kong. So, I manage to get the license from the publisher to photocopy the book. We pay the license fee for photocopying. Then we don’t need to ask the students to buy the books. But some of them still didn’t want to buy it. I said well, “if anybody shows up without a copy of this book in class, I’d take them to the head of my department.” You have to force these students to achieve, to do some reading, to read the books prescribed to the course. It’s less expensive than the mobile phone. It’s strange system.... And their learning attitude is poor.”

HTM: L1

4.2.2.6 Views towards their subjects

Applied Physics (AP)

Most AP teachers considered their subjects to be the basis for advanced learning in their course and so they required their students to acquire strong knowledge-based and mathematical skills in their subjects.
"This subject is a prerequisite to some subjects. So, after each chapter, I make a summary of the key points which they will use or come across again in other subjects."
AP: L3

"This subject, we aim to strengthen their experimental skills. Besides these skills, they also learn about how to handle the data. However, they have some difficulties on math as they don't have a high standard. Many of them have problems in mathematical skills. It is easily found when they handle mathematical data."
AP: L6

Hotel and Tourism Management (HTM)

Most HTM teachers considered their subjects to be interesting and an introduction to and the foundation of their field. They liked to use examples to help them relate the concepts they taught to the students' life and their future work. They were inclined to facilitate their students' learning by means of discussions and real cases.

"I'm lucky that I can teach something funny. So I can make it more interesting. Even if I teach accounting, I'd try to make it interesting instead of...it's very hard.... So, the subjects (in HTM) are easier to teach. So, it's no black and white. No right or wrong. In marketing or cooking, nothing is black or white. It's all grey and different shades of grey. .... If they can't explain that if you know this and that you can do something, it's easier to learn."
HTM: L4
"In Marketing, there's no absolute answer. We focus more on how they justify their answers."

HTM: L4

"For Front Office Management, it's very boring to tell them straightaway the check-in and check-out process. In light of this, I'd tell them more examples and ask them questions to make the class more interactive so that the students find it more interesting.... So far I enjoy teaching these subjects. Otherwise, it's a torment to me while the students cannot learn anything."

HTM: L3

4.2.2.7 English as medium of instruction

The students' standard of English was a concern for most teachers, mainly because they considered that the use of English as medium of instruction made students behave passively in class. The standard of English did not appear to be a concern in students' interviews.

"They are not used to raise questions. They don't have the initiative. They are more used to the "feeding" system. Another reason is that some students are so lazy that they don't study after school. So, how can they have any question to ask? The third reason is the medium of instruction. Now we have to teach our students in English. Perhaps this is the major problem to them."

AP: L2
"The seminar participation was very poor. I observe that if I asked them a question, "What do you think?" Most of the students talked to their peers sitting next to them and they discussed in Cantonese. The students next to them might reply, if I was lucky. If I was not lucky, nobody would reply. No communication. They're very passive."

HTM: L1

One teacher considered the low standard of English a hindrance to student learning.

"Our students are not good in English and they don't memorize the key points. When you look at what they have written, you easily find that their concepts are wrong. If they don't know about the definitions, how can they move on?"

AP: L4

4.2.3 Summary

The qualitative findings show very different learning environments in the AP and HTM departments. In the interviews, most AP students complained about their heavy workload in terms of course assignments, laboratory reports, computer programming assignments, and examinations. They complained about the heavy demand made by the number of subjects they had to take, the number of assessments and an overloaded curriculum. Many of these issues had reduced their opportunities to pursue the subjects at length and in depth. Students reported that they had no choice of subjects, as all first-year subjects were compulsory. They also had limited choice in how to study. Some AP students were not convinced of the relevance of the theoretical aspects of their subjects to their future careers, or of any real life application of some subjects.
Many AP students felt that getting good grades was their ultimate motivation for study and tried to memorize the course material even without understanding it. A number of course characteristics relating to the assessment system were also made explicit. AP students had final exams for nearly all subjects, with 70% of the total assessment based on the final examination. Therefore most students felt some panic and were anxious about their examinations and so they tended to memorize the material when they did not have enough time to digest it.

On the one hand, AP teachers mainly used conventional ways of teaching to transmit knowledge didactically. It seemed that the AP teachers just engaged the more ‘academic’ students and tended to ignore many of the less academic students although they constituted the majority of the class. After one year, some AP students were disappointed with the course and became more extrinsically motivated. The less academic students were also concerned about their grades and so their learning strategy was to rote learn for exams even though they did not understand.

On the other hand, HTM students thought that their workload and assessment were acceptable, and that they had some choice over their elective subjects and more choice regarding their methods of study. Their teachers used a variety of teaching methods to motivate them to learn, and they used different assessment tools to evaluate the abilities of their students and to what extent they had achieved the objectives of the subjects. Most students appreciated such a student-centred teaching approach. An intrinsic motivation to learn was shown in the interviews by most of the HTM students after one year of study. They saw the relevance of the course especially after the 10-week placement at the end of their first year. Most HTM students showed
enthusiasm for their course and enjoyed it, and became intrinsically motivated to learn.

Table 4.13 summarizes the differences in the learning environments between the HTM and AP departments, differences which suggest that the two departments favour deep and surface learning approaches respectively.

<table>
<thead>
<tr>
<th>Area of difference</th>
<th>HTM Department</th>
<th>AP Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student workload</td>
<td>Acceptable</td>
<td>Heavy</td>
</tr>
<tr>
<td>Choice of subjects</td>
<td>Some choice</td>
<td>Little choice</td>
</tr>
<tr>
<td>Assessment</td>
<td>A mix of methods used to foster the desired mix of learning outcome</td>
<td>Limited methods</td>
</tr>
<tr>
<td>Exam component</td>
<td>No final exam for some subjects; Final Exam 40%</td>
<td>Exams for nearly all subjects; Final Exam 70%</td>
</tr>
<tr>
<td>Student attitude to assessment</td>
<td>It can be interesting and involve collaboration with others.</td>
<td>High pressure because Grade is very important.</td>
</tr>
<tr>
<td>View of teaching</td>
<td>Students construct their own understandings.</td>
<td>Students learn teacher’s understandings.</td>
</tr>
<tr>
<td>Teaching methods</td>
<td>Varied</td>
<td>Normally didactic</td>
</tr>
<tr>
<td>Learning methods</td>
<td>Varied learning methods embedded in courses</td>
<td>Limited range</td>
</tr>
<tr>
<td>Range of learning behaviours supported</td>
<td>Wide</td>
<td>Narrow</td>
</tr>
<tr>
<td>Teacher’s relationship with students</td>
<td>Friendly and accessible</td>
<td>Senior, Parent and Son</td>
</tr>
<tr>
<td>Learning approaches favoured by this context</td>
<td>Deep</td>
<td>Surface</td>
</tr>
<tr>
<td>Student’s motivation</td>
<td>Intrinsic (extrinsic for those who just want to make the grade)</td>
<td>Extrinsic (intrinsic for those who like to know a lot)</td>
</tr>
</tbody>
</table>
Chapter 5: Analysis and Discussion

In Chapter 4, the quantitative and qualitative findings of this research were presented. An attempt was made there to provide a certain degree of analysis of those findings together with their presentation. The purpose of this chapter is to bring together the analyses in a series of discussions, summarizing the findings from Stage 1, comprising two rounds of questionnaire administration, and Stage 2, comprising interviews with students and teachers.

5.1 Analysis of learning approaches and learning contexts

The quantitative findings showed that the two groups of students, HTM (Department of Hotel and Tourism Management) and AP (Department of Applied Physics), exhibited quite different learning approaches when they started their university studies. The HTM students exhibited a significantly higher score in their surface approach than the AP students, while the AP students exhibited a higher score in deep approaches than the HTM students. However, after one year there was no significant difference between the two groups of students in all three approaches of learning (surface, deep and achieving).

Statistical analysis showed that there was a significant drop in the surface score of HTM students after one year. The analysis of the interviews with HTM students showed that many facets of good teaching in HTM had probably contributed to the drop in their surface approach to learning, with a significant impact on the quality of student learning.
The quantitative analysis did not reveal any significant changes in the learning approaches of AP students. Further qualitative analysis revealed that contextual factors such as didactic teaching, a heavy workload and a lack of intrinsic motivation did encourage a surface approach to learning. Many AP students became more extrinsically motivated in their learning, and more students tended to use a surface approach after one year.

To further the discussion of the findings, an attempt will be made to answer the research questions raised in Chapter 1.

5.1.1 Research question no. 1

What are the approaches to learning adopted by the two groups of first-year students of the PolyU from the Department of Applied Physics (AP) and the Department of Hotel and Tourism Management (HTM)?

5.1.1.1 Profile of students’ approaches to learning

Analysis of the SPQ data of the two groups of first-year students revealed that nearly half (46%) adopted a predominantly surface approach to learning while 20% adopted a predominantly deep approach. The remaining 34% adopted a ‘no bias’ approach.

Comparing the mean surface scores of the two groups of students, it is 45.57 (SD = 6.23) for HTM students and 41.71 (SD = 6.10) for AP students, there is a significant difference in the deep approaches between the two groups. This means that the HTM
group is more of a ‘surface’ group than the AP group.

5.1.1.2 Comparison of HTM and AP groups with Hong Kong norms

Comparing the two groups with the Hong Kong norms (Biggs, 1992), the HTM students are shown to have a higher score in their surface approach than both the AP students and the Hong Kong norm. On the other hand, the AP students have a higher score in both their deep and achieving approaches than both the HTM group and the Hong Kong norm.

Table 5.1 Approaches to learning scores: HTM vs. AP students vs. Hong Kong norms

<table>
<thead>
<tr>
<th></th>
<th>HK*</th>
<th>HTM</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>40.24</td>
<td>45.57</td>
<td>41.71</td>
</tr>
<tr>
<td>Deep</td>
<td>43.50</td>
<td>42.54</td>
<td>45.50</td>
</tr>
<tr>
<td>Achieving</td>
<td>39.05</td>
<td>41.56</td>
<td>45.14</td>
</tr>
</tbody>
</table>

*Hong Kong norms by Biggs (1992)

Since the students took the Pre-SPQ in the first month of their university studies, the Pre-SPQ scores should reflect their learning approaches before the impact of university teaching. A comparison of the two groups showed that the HTM group scored significantly higher in its surface approach to learning. One reason for this could be that HTM attracted more surface bias students due to the nature of the course, which was strongly vocationally oriented whereas the course taught in AP was theoretical and not much vocationally oriented.
5.1.2 Research question no. 2

Do students change their approaches to learning as they progress through their course of study?

5.1.2.1 Surface approaches

Analysis of the SPQ data for the two groups of first year students after one year revealed that more than half (52%) had adopted a predominantly surface approach to learning while 22% had adopted a predominantly deep approach. Furthermore, 26% of the students adopted a 'no bias' approach. There were no significant changes in the percentage of students in each category.

However, examining each group of students separately, a comparison between their Pre-SPQ and Post-SPQ scores by t-test showed a significant drop in the HTM students' surface approaches, as shown in Figure 5.1. The changes in surface approaches for AP students were not significant.
5.1.2.2 Deep approaches

A comparison of Pre-SPQ and Post-SPQ deep approach scores revealed a slight, statistically not significant, decline for both HTM and AP groups, as shown in Figure 5.2.
The slight decline in deep approaches for both AP and HTM students can be considered the result of the good job done by the two departments. Kember and Gow (1990) found that the deep and achieving approaches of the students in their Hong Kong sample declined consistently from first to final year. They concluded that any innovation which shows an increase in the use of the deep approach has, therefore, achieved something quite significant. They said that it would be some sort of achievement in higher education if deep approach scores do not decline.

This phenomenon of a decline in deep approach from first year onward is not confined to Hong Kong; the same has been found in Australian tertiary institutions. Watkins (1982) and Watkins and Hattie (1985) showed that most Australian students dropped in their deep scores after their first year of study at university. They argued that such a decline was due to undesirable contextual factors that prevail in most higher education institutions, including work pressures, assessment pressures, surface demands of lectures, etc.

5.1.2.3 Achieving approaches

There was a slight decline in the achieving approach scores for the HTM group and a bigger one for the AP group, as shown in Figure 5.3, but neither was statistically significant.
5.1.3 Research question no. 3

What factors in the learning context provided by departments related to student’s approaches to learning?

The administration of the SPQs led to two important findings:

(i) The surface score of HTM students dropped significantly after one year’s study.

(ii) At the beginning of their first year, the HTM students exhibited a significantly higher score in their surface approach than the AP students. However, after one year, there was no significant difference between the two groups of students in any of the three approaches to learning; see Table 5.2.

Figure 5.3 Achieving scores for HTM and AP students in Pre- and Post-SPQ

![Achieving Score Graph](image-url)
Both students and teachers strongly supported the results of the SPQs in their inter­
views. Below we relate a number of contextual variables to other research evidence,
and suggest that each of these variables could influence students to adopt either a
surface approach or a deep approach to learning.

5.1.3.1 Heavy workload

In the interviews with the AP students, most expressed the view consistently that the
coursework was demanding. They complained about the heavy workload and the
pressure that resulted from it. Coursework overload appears to have been frustrating
to most AP students. This led them to switch study methods to memorizing without
understanding in order to meet the demands of examinations, which they considered
necessary for 'survival'. These sentiments were not only expressed by the surface
learners but also by the deep learners in the AP group.

Not just the AP students expressed dissatisfaction with the heavy workload of the course; AP teachers also found that they did not have enough time to cover the material. Two teachers gave up involving students in class by asking questions or having students make presentations. One teacher even prepared nice and easy-to-read handouts for students in order to cover the curriculum and reduce the reading load of students.

It has been recognised by many researchers that the workload of courses has an impact on the learning approach adopted by students, and it has been suggested that heavy workload is associated with students taking a surface approach to learning (Stokes et al., 1989; Gibbs, 1992; Ramsden, 1992; Kember et al., 1995).

There is evidence that engineering courses are ‘over-full’ and that students have difficulty in coping with the increasing workload in such courses. Ellison (1990) investigated the workload of engineering courses over the last ten years or so, and concluded that action needed to be taken to ensure that the content was manageable to students. He suggested that the content of engineering courses be made more relevant and less demanding so that engineering students are encouraged to adopt deep learning strategies.

An increasingly ‘over-full’ curriculum and heavy workload have become a concern not only in engineering courses. Many university disciplines face a constant increase in their knowledge base, which in some areas amounts to an information explosion.
This creates pressure to include the new material so as to remain relevant and up-to-date. However, the existing content remains as ever before so curriculum loads almost inevitably creep upwards.

Over-full courses and problems of coverage have dominated the thinking of most teachers about what it is that leads to overload and to surface learning. Almost all university courses try to cover too much, as Gardner (1993), of the Harvard Project Zero, a very influential project on assessing understanding, said:

The greatest enemy of understanding is coverage—I can’t repeat that often enough.... Obviously, if people took this aphorism seriously, there would be a total revolution in education, and 95% of what educators do every day would have to be changed.

(Gardner, 1993, p. 24)

5.1.3.2 Assessment

The quantitative analysis shows a negative correlation of deep approaches to learning with performance outcome in terms of GPA scores for AP students, while the qualitative analysis revealed that preparing for exams played a vital role in the AP students' learning. Most AP students were very conscious of grades and many admitted that they memorized course material without fully understanding it. They also claimed that an ability to memorize without understanding is sometimes enough for exams. Nearly every subject in the AP course had a final exam, accounting for 70% of the final grade.

Memorizing is necessary in certain circumstances, as suggested by an AP teacher,
since there are some things that students need to memorize, and that it was easy for students to memorize things when they understood the material. However, when the majority of students consistently adopt rote learning without understanding, the course is clearly not delivering in accordance with the objectives of higher education.

A study by Marton and Wenestam (1978) showed that a surface approach does tend to produce marginally higher scores on tests of factual recall immediately after studying. However, this small advantage is quickly lost. A surface approach leads to rapid forgetting and as little as a week later, students who have taken a deep approach will score far higher than those who took a surface approach, even on tests of factual recall.

Some AP students indicated that they started to use a deep approach in their studies when they entered university. They became very conscious of their examination results and studied past examination papers, and when they found that the exam questions relied mainly on memorization and factual recall, they fell back to a lower level of learning, i.e. to rote learning and memorization.

It is well established that the nature of assessment has a profound effect on the learning approaches of students. Studies (Watkins & Hattie, 1981; Thomas & Bain, 1984; Ramsden, 1992) have shown that a surface approach to learning is associated with inappropriate assessment, which is perceived to measure rote-learned material. That means that when students perceive the nature of the assessment as encouraging memorization and recall, they are more likely to adopt a surface learning approach.
Some AP students revealed that they lost enthusiasm for their course after one year because of the heavy workload and the nature of the assessment. This finding for the AP group is in accordance with a study by Kember & Gow (1990), which showed that students' intrinsic interest and enthusiasm declined as they progressed through a course because of coursework overload and the nature of assessment. As a result, the learning strategies employed by students decline in effectiveness.

5.1.3.3 Memorizing

There are two forms of memorizing, routine rote learning and meaning repetition intended to reinforce and extend understanding (Kember & Gow, 1990; Tang, 1991). Interview data revealed that about 20% of the AP students were more academic than their peers in that they liked to combine memorizing with understanding. These students memorized material not simply to regurgitate it but to meditate upon it so that they might understand it better; they thus used memorization to deepen or develop their understanding. In doing this they revealed a learning trait called 'deep memory' by Tang (1991).

This finding was consistent with a cross-cultural difference identified by Dahlin and Watkins (2000) in in-depth interviews with students in both Western international schools and Chinese-system secondary schools in Hong Kong. They showed that Chinese students, unlike their Western counterparts, used repetition for two different purposes, namely, one, to create a 'deep impression' through memorization, and, two, to deepen or develop their understanding by discovering new meaning. The Western students, on the other hand, tended to use repetition only to check that they had really
remembered something.

5.1.3.4 Choice of what is to be studied and how to study it

The AP students complained in the interviews that they had no elective subjects, and that all their first-year subjects were compulsory, with elective subjects only being offered in their second and third years. They also claimed that they had limited choices in how to study their subjects. Most of the subjects required them to do 'mathematical exercises' and computer programming exercises. A few students stated that the course disappointed them because they thought that university should be a place of more ‘freedom’ and ‘space’ for students to control their learning but instead they found the course design very restrictive. They found themselves studying just like in secondary school, which was very exam oriented.

The AP teachers were of the view that most of the first-year subjects were fundamental subjects that all students should master before undertaking more advanced studies in their course. They wanted their students to acquire sound knowledge of their subjects and strong mathematical skills. They emphasized the high standard of their course, a standard that seemed would be quite difficult for a majority of the less academic AP students. These students might prefer some other subject choices as alternatives but the department could not offer them any. This might explain why some AP students lost their enthusiasm for the course.

On the other hand, HTM gave its students some independence in choosing what to study and how to study. It offered elective subjects to their first-year students, and
many of the HTM subjects allowed students to work independently by doing project work or written assignments. It was found in the interviews that HTM students were enthusiastic about their learning and their course.

The desire by AP students to have more control over their learning would have been supported by Biggs (1989, 1999) and Ramsden (1988, 1992), who strongly emphasize the need for students to gain autonomy and take responsibility for learning, considered by them to be important factors in students’ adopting a deep approach to learning. Research by Trigwell and Prosser (1991a,b) also found that a deep approach to learning was associated with students’ perception that they had some independence in choosing what was to be studied.

5.1.3.5 Student motivation

Related to control over learning is student motivation. AP teachers in general perceived that their students had low learning motivation. However, good teaching should have the potential to motivate students and encourage them to take responsibility for their own learning. The importance of giving students control over their learning, considered to be associated with an intrinsic motivation to learning, was emphasized by Dart (1992):
The implications...are that if we want to increase the probability that students will use cognitive and metacognitive strategies associated with deep approaches to learning, it is necessary that they have high level of intrinsic motivation for learning. To arouse this motivation, lecturers need to ensure that they not only advocate that students control their own learning but also provide opportunities for students to experience being in control of their own learning and developing meaningful understanding.

(Dart, 1992, p. 10)

5.1.3.6 Conception of teaching and teaching approaches

There were obvious differences between AP and HTM teachers regarding their conceptions of teaching and the teaching approaches adopted by them. According to the teacher interviews, the AP teachers used mainly conventional lectures and tutorials to teach. They were very concerned about the content coverage of their subjects. Two AP teachers claimed that they did not bother to ask questions in class since they expected there would be no response anyhow, and that asking questions would only waste time and slow down the pace of their teaching.

The interviews revealed that many AP teachers saw their role as one of transmitting a fixed set of disciplinary knowledge and expertise. They complained about their students’ low standards and motivation. While the students’ profiles had changed in the last ten years, the teachers had not changed their conceptions of teaching or their teaching methods so as to meet the challenge of teaching students a large proportion of whom were surface learners. The AP teachers seemed unwilling to accept that the standard of their student in-take was lower than it used to be. They thought that this less-academic group of students was not fit for a university education or fit to study in
Most of the AP teachers used an information-transmission and teacher-focused approach. They used didactic teaching methods, focused on subject content, and their main intention in teaching was to transmit information to students. Many years ago, with a more academically-select group of students entering university and AP, this way of teaching may not have been a problem for students but now it has become a hurdle for AP students and teachers alike.

On the other hand, most HTM teachers saw their roles as both professional expert and teacher. They used a variety of teaching methods to achieve the objectives of their subjects, such as discussions, role-plays, visits, field trips, guest speakers, and simulated games, to motivate students to learn. They encouraged students to discuss and interacted with them in class. They spent a lot of time involved with students learning rather than simply on the quantity of material to be covered.

Besides using a variety of teaching methods, HTM teachers also varied their assessment mode, using project work, performance of operational skills, and written assignments to assess their students. In lectures and tutorials, HTM teachers tried often to relate the teaching material to the work environment and recent developments in the industry. They adopted a student-centred approach and encouraged an active-learning attitude in students. Many of their activities aimed at changing students' conceptions or understanding of not just their industry but also the outside world.

The HTM teachers held more positive views of the subjects they taught and of their
students than the AP teachers. HTM teachers considered most of their students to be motivated to learn, and thus liked their courses. The HTM teaching was very successful, demonstrated by a significant drop in a surface approach to learning taken by their students. Most of the HTM students also reported in the interviews that they were motivated to learn and that they were interested in their courses.

Trigwell et al. (1999) showed that qualitatively different approaches to teaching were associated with qualitatively different approaches to learning.

...indicated that in the classes where teachers describe their approach to teaching as having a focus on what they do and on transmitting knowledge, students are more likely to report that they adopt a surface approach to the learning of that subject. Conversely, but less strongly, in the classes where students report adopting significantly deeper approaches to learning, teaching staff report adopting approaches to teaching that are more oriented towards students and to changing the students conceptions.

(Trigwell et al., 1999, p. 57)

That a teacher's conception of teaching has a great influence on the approach to learning taken by students was demonstrated by Gow and Kember (1993). They showed that the conception of teaching as facilitation of learning encouraged deep approaches to learning, while a conception of teaching as transmission of knowledge was found to be more likely to induce surface approaches. They argued that if we want students to adopt deep approaches to learning, it is important to direct initial attention towards the lecturers' conceptions of teaching.
5.1.3.7  Role of teaching and relationship between teachers and students

One interesting quantitative finding was of a significant correlation between a deep approach to learning and satisfaction with students’ relationship with teaching staff in AP. Some AP students claimed in the interviews that they would work harder and spend more time on subjects taught by good teachers. In the eyes of most of the AP students, a good teacher was either someone with an intellectual mastery of the subject area or someone who cared about their personal lives and well-being. Their relationship was found to be like the (ideal) one between father and son/daughter. The AP teachers in the interviews also revealed that they often educated their students in moral behaviour as part of their development of the student as a ‘whole person’.

The teachers in AP considered their role as teachers as one of ‘cultivating’ both intelligence and promoting positive attitudes to society and responsible moral behaviour. They considered themselves as models for their students in both the academic and non-academic spheres. More than that, the ‘moral and pastoral care’ dimensions of their role were very important to AP teachers. This combining of the roles of ‘academic’ and ‘pastoral care’ by AP teachers was referred to by Cortazzi and Lixian (2001) as ‘books and society’, and the teachers who adopted such a role as friends and parents.

In general, class teachers can be divided along the lines of teaching as ‘transmission’ vs. ‘supporting’, as noted by Kember (1997b). Accordingly, the AP teachers could be put into the ‘transmission’ category and the HTM teachers into the ‘supporting’ category. Outside the classroom, there are yet other divisions; e.g., the AP teachers
saw their roles as 'modelling' and 'cultivating', and would ask students to approach them if they were having difficulties in their studies, and encouraged them to work harder.

The conception of 'cultivating' embraces more than cultivating intelligence, it also includes the cultivating of morals and correct attitudes. This concept of education is very old-fashioned, going back to Confucianism (Lee, 1996), and to the idea of filial piety. The son's (or daughter's) filial duty is to care for and nurture his or her physical, mental and moral virtues and qualities, to be as perfect as possible, in order to pay due honour to his or her fathers (Ho, 1998).

Many AP students had positive views about their teachers' behaviour outside the classroom, and their good relationship with them may have had a positive influence on the more academic students. Student interviews revealed that many of the more academic AP students admired and respected the knowledgeable and good teachers, liked to approach them, and considered them their idols. The analysis of the interviews supported the findings of the quantitative analyses that the more deep learners and the more achieving learners in AP were more satisfied with their relationship with their teachers.

A 'Video Interview Project' conducted in the Hong Kong Polytechnic University (Jones et al., 1996) collected information on what students expected of 'good teachers' and 'good teaching'. The project concluded that if teachers wished for students to become interested in what they were teaching, and to learn effectively, then they should aim to become as effective as possible in the three domains of head,
hand and heart, where 'head' refers to knowledge of the subject, 'hand' to teaching skills, and 'heart' to attitudes towards teaching and concern for students. The implication for some of the AP teachers is that to be effective they need to address the domain 'hand'. In other words, while they already have a lot of the qualities of the two domains 'head' and 'heart', they are currently lacking in the domain 'hand' to be considered 'good teachers', especially with respect to the group of surface learners or the less academic students in their class.

5.1.3.8 Course aims

An examination of the programme aims of the two undergraduate degree courses offered by the AP and HTM Departments found that the aims of the programme offered by AP were more focused on knowledge. The programme aimed to equip the students with “one or more areas of engineering emphasizing the interface between physics and engineering” ('Programme Booklet', Department of Applied Physics, August 2000). Although the booklet stated that the programme also aimed to develop generic skills, such as communicative skills and independent thinking skills, it was discovered in interviews that the teaching and learning activities in AP did not offer many opportunities for students to practice these skills.

It was also found that the aims set out by AP did not indicate any specific employment sector in which the students might develop careers after graduation. The last statement on course aims in the Programme Booklet says: "Having completed the course, students will be better able to cope with advance and change and to assimilate new ideas, thus becoming more flexible and adaptable to function in different employment
environments.” (Programme Booklet, Department of Applied Physics, August 2000, p. 1). Students failed to relate what they were going to learn in this course to their future employment, which was not helped by the AP teachers’ failure to tell them how their subjects could be applied to careers.

During the interviews, many AP students showed their worries about their future. They failed to see in which areas they would be able to develop their careers. They believed that graduation with a good honours degree would help them find a good job or aid them in further study, and therefore they worked hard for good grades. These beliefs obviously influenced the students since there was a very strong tendency for them to have extrinsic motivation for learning and adopt surface approaches.

HTM students were comparatively clear about why they were doing the programme. Many subjects involved students in searching for meaning and in making sense of the subject matter through relating and applying ideas. The learning and teaching activities encouraged them to learn from real-life experiences. The job placement allowed students to learn to deal with real problems in a work setting and reflect on the discrepancies in university vs workplace. A number of students commented that they had become more intrinsically motivated and had adopted a more deep approach to learning compared with their studies prior to entering university.

5.1.3.9 Cultural and prior educational influences

Both AP and HTM teachers revealed that they found students generally passive. Some AP teachers did not ask questions in class because they expected no response and so
‘saved’ time for more mathematical exercises. Most HTM teachers used a variety of methods to motivate students to participate in discussions. However, one Western HTM teacher complained very strongly that their students were too passive in class and just liked to take whatever teachers prepared for them and that they wanted to be ‘spoon-fed’.

Research indicates that Chinese students’ passivity is the result of cultural influences. According to Hu & Grove (1991), Western students tend to become analytical, critical, discursive and conceptual, whereas Chinese students tend to be more passive and reluctant to put forward views that are contrary to those expressed or taught by the teacher. This tendency of Chinese students probably has its roots in Chinese tradition and the reverence paid to scholars and teachers. Traditionally, ‘laoshi’ (teacher) was seen as providing more than an academic education as they were also responsible for developing their students into ‘whole persons’.

The likely other reason for Chinese students’ passivity is the influence of their prior educational experience. Primary and secondary school in Hong Kong is examination-driven, and students’ classroom experiences are examination-oriented. This impacts on their perceptions of ‘proper’ teaching and learning. Many students fail to make the transition from pupil (one who receives information) to student (one who is proactively involved in learning). Kember and Gow (1990) found that the students in their studies preferred a clear definition of course content, and favoured tasks prescribed by the teacher.

In answering research question 3, the analyses revealed two different teaching and
learning contexts in the HTM and AP departments. The contextual factors which tend
to encourage students to adopt either a surface or a deep approach may be
summarized as follows.

Contextual factors encouraging a surface approach in AP include:

(i) Insufficient time; too high a workload.
(ii) Inappropriate course design; emphasis on coverage at the expense of depth;
insufficient time to engage with tasks.
(iii) Assessment system rewards surface approach; exams rely on rote learning.
(iv) Teaching is mainly by transmitting information.
(v) Teaching takes a teacher-centred approach.

Contextual factors encouraging a deep approach in HTM include:

(i) Course design emphasises the process of teaching in order to engage
students in learning.
(ii) Teaching to elicit responses from students, e.g., by questioning or
presenting problems, rather than by teaching to expound information.
(iii) Teaching encourages interactions with others.
(iv) Teaching by building on what students already know; teaching by relating
theory to the practical world, industry or real-life cases.
(v) Teaching encourages a positive, friendly atmosphere so students can make
mistakes and learn from them.
(vi) Teaching takes a student-centred approach.
5.1.4 Research question no. 4

Are the approaches to learning adopted by students effective predictors of students' academic performance as measured by Grade Point Average (GPA) and their degree of 'satisfaction with university experience'?

We will discuss research question no. 4 in two parts, one dealing with the predictability of the GPA, and the other with the predictability of their 'satisfaction with university experience'.

(i) Are the approaches to learning adopted by students effective predictors of students' academic performance as measured by Grade Point Average (GPA)?

The statistical analysis showed no significant correlation between learning approaches and GPA scores for the HTM group. For the AP group, both the deep and the achieving approaches in second year correlated negatively with the second-year GPA results, which means that the more academic students in the AP group scored lower grades. However unexpected a result, the assessment criteria and the students' learning practices might offer some possible explanation for this. In the interviews, the AP students claimed that the final exams – which constituted 70% of the final grade – relied very much on memorization, and that the exam questions were repeated over the years. One student said that the lecturers would not give high marks because his answers were not the same as in the notes. On the basis of both the questionnaire and the interview data, it seems possible that the assessment practices in AP encouraged surface approaches.
There was a problem in using GPA as a measurement of academic outcome. Since the GPA1 and GPA2 (GPA for Years 1 and 2 respectively) were the weighted arithmetic average percentage mark for about twelve subjects taken in the first and second years of the course respectively, there was a chance that high scores in some subjects were counterbalanced by low scores in other subjects. Academic performance as measured by GPA therefore seems to be questionable regarding the outcome that is being measured.

Recently, Provost and Bond (1997) used a shortened version of the ‘Approaches to Study Inventory’ (Entwistle & Ramsden, 1983) and found it to be a poor predictor of academic performance for second-year psychology students. Jones and Jones (1996), in a similar study of first-year students in Hong Kong, found no significant association between student performance and approaches to study as measured by SPQ scores.

Besides relying on the GPA, there may be a need to go to other sources to assess students' learning outcomes. Biggs and Collis (1982) describe the SOLO (Structure of the Observed Learning Outcome) taxonomy as a useful tool for testing students' understanding. The SOLO taxonomy has five levels: (i) pre-structural ('incompetence'), (ii) uni-structural, (iii) multi-structural, (iv) relational, and (v) extended abstract. Trigwell and Prosser (1991a) showed that there is a positive correlation between a deep approach to learning and higher quality outcomes as indicated by the higher levels in the SOLO taxonomy.

(ii) Are the approaches to learning adopted by students an effective predictor of
students' 'satisfaction with university experience'?

This is an attempt to discover whether any correlation can be determined between students' approaches to learning and their 'satisfaction with university experience'. The quantitative analysis revealed a correlation of the surface approach scores with students' satisfaction with their 'relationship with the teaching staff' in HTM. There was also a correlation between both deep and achieving scores with students' satisfaction with their 'relationship with the teaching staff' in AP. These findings are interesting since it means that the students who were satisfied with their relationship with teaching staff were HTM surface learners but AP deep and achieving learners. The interviews also support the finding that the teaching in HTM engaged students with different abilities while the teaching in AP only engaged the more academically inclined deep and achieving learners.

The quantitative findings cannot provide much of an answer to the question as to whether there is any correlation between students' approaches to learning and their 'satisfaction with university experience'. One reason for this may be the small sample size of this study. Another reason may be that many factors are likely to contribute to students' 'satisfaction', and that for this reason the concept of satisfaction is very subjective and difficult to quantify. When students answered the question 'How much are you satisfied with the teaching in general?', some students might be thinking about particular teachers, while others might be thinking of particular modes of teaching.

There also was a shortcoming in the design of the reporting of satisfaction because it
was found that many students answered by ticking ‘3’, i.e. the middle of a 5-point scale ranging from 1 ‘very dissatisfied’ to 5 ‘very satisfied’. The two modifications which could be made to the probing of ‘satisfaction’ are to make the questions more specific, and to make the scale for the answer larger.

However, the qualitative findings derived from the student interviews showed that most of the HTM students were satisfied with both teaching and course. They found the assessment and workload appropriate. In addition, most of the HTM students were satisfied with their relationships with other students and their teachers. There was a student society in HTM which organized activities for students, and many HTM teachers and students liked to attend these to get close to each other.

On the other hand, most of the AP students complained about the assessment and heavy workload. They were not satisfied with their choice of subject, and found both the teaching and the course too demanding. The overall picture therefore was that most of the AP students were not satisfied with their course. However, most of the students were satisfied with their relationship with their teachers. The more academic students liked to approach good and knowledgeable teachers in order to learn from them.

5.2 Discussion

5.2.1 Aspects of HTM and AP courses which promote a deep learning approach

The analysis of the data shows in many places that there are facets of the two courses in HTM and AP which encourage different learning approaches. Gibbs (1992) and
Biggs (1999) have both described four broad categories of characteristics that research has associated with a deep approach to learning, namely: (i) motivational context, (ii) learner activity, (iii) interaction with others, and (iv) a well-structured knowledge base. The positive replies given in the interviews by the majority of the HTM students and teachers concerning the teaching methods used in the course, quoted selectively below, would seem to support these categories.

(i) Appropriate motivational context

An appropriate motivational context is achieved when the student has a positive reaction to the learning process, leading to a sense of 'ownership'.

"...it's very different that I need to look for information myself. Also I'm responsible for my learning." HTM student

"The placement makes me understand that I need to be smart and good in many skills e.g. Interpersonal skills if I want to develop my career in this industry. And I think we can practice what I have learnt from theory in class in placement." HTM student

(ii) Learner activity

Active rather than passive learning is associated with a deep approach to learning.

"...other than my major study, I realise that I need to learn a lot of things...Now I take an active role in my own learning. I'd think more about what I want to do in the future instead of what grades I want to get from my study." HTM student

"I become more active in learning. We don't have textbooks for most
subjects. So we need to ask more and look for more books and information. We need to study on our own.” HTM student

(iii) Interaction with others

Biggs (1992) describes this social process of interaction as either ‘vertical’, as in student-teacher interaction, or ‘horizontal’, as in student-student interaction.

“The lecturers encourage us to have more interactions. Since our class size is small (20 people), we always discuss about the questions in the books. If we have any problem, we can ask the lecturers...” HTM student

“Group Project is quite useful. In the project, I discussed with other classmates about the theories.” HTM student

(iv) Well-structured knowledge base

Learning is a cumulative experience, so the learning process is enhanced when past learning is made relevant to a progressive experience.

“In the class, I often use examples from our daily life to make them easier to understand the concepts.... If I’m going to talk about destination, it’s about decision process concept. If the students haven’t experienced this before, I’d ask them to think about how they make their decision on buying a Coke. I always relate new concept by using their previous knowledge, they feel easier to understand the concepts in this way.” HTM lecturer

“We had to do a project in which we started a business from zero. We had to choose a marketing strategy. We can choose any business and target group of customers. I think this can develop a student’s thinking skills and the skill to apply prior knowledge to the project.” HTM student
The main difference between the teaching contexts in the two departments is that the first three characteristics, i.e. motivational context, learner activity, and interaction with others, are found in abundance in HTM but lacking in AP.

5.2.2 An ‘active classroom’

Throughout the process of analysing the research data and consulting the research literature, one overarching concept emerged. This was the important concept of ‘interactive student-centred learning’, considered a vital element for quality learning and teaching. The concept is part of the framework of an ‘active classroom’, which aims at promoting deep learning approaches in higher education.

The real meaning of ‘interactive student-centred learning’ is as follows:

(i) It involves students in searching for meaning and in making sense of the subject matter through analysing, relating, applying and reflecting on ideas. Students do not learn merely by rote or memorization. They are motivated to think deeply and to apply their new understanding and skills in exploring and dealing with real-life problems in their future professions.

(ii) It involves a shift in responsibilities for both the teacher and the students. Students will be given greater responsibility for their own learning, more opportunities for engaging in tasks like identifying and tackling problems, proposing ideas and discussing them with others. Teachers will assume the responsibility for creating such opportunities to facilitate student learning, instead of direct lecturing.
In other words, interactive student-centred learning is not about

(i) leaving the learning to the students, having them struggle on their own;
(ii) pleasing the students; or
(iii) making the learning less demanding.

This study provides evidence that HTM teachers adjusted their teaching decisions, their teaching techniques and their assessment methods to their students and the learning situation, a situation which worked very well for their students. A review of the literature and practices in the PolyU that new directions are needed if we are to promote the development of the ‘active classroom’.

5.2.3 Directions for change to ‘active classroom’

5.2.3.1 Interactive teaching

Teachers should shift from a didactic form of teaching towards a more interactive form of teaching and learning where students are actively engaged in meaningful learning tasks inside and outside the classroom. Instead of learning primarily from what is taught in class, students should be increasingly encouraged to learn from real-life experiences outside the classroom.

An innovative idea of ‘apprenticeship’ in course design was advocated by Gardner (1993) in the Harvard Project Zero. In apprenticeships, students learn by watching and asking questions of someone who really knows what he or she is doing, and keep on doing for years. In the beginning, students are given easy tasks, but as their skills increase, their tasks get harder and harder. Why do apprenticeships work? Gardner
They provide rich information, nearly all of which pertains to final performance. They permit youngsters to establish a personal bond with accomplished professionals.... In short, apprenticeships may well be the means of instruction that builds most effectively on the ways in which most young people learn. And since learners work directly with master, any misconceptions or stereotypes that may interfere with learning can be dealt with directly—and with dispatch.

(Gardner, 1993, p. 23)

5.2.3.2 Enquiry-based and problem-based learning

Teachers should move from an expository mode of teaching to more enquiry-based learning approaches, for example, problem-based learning and project-work learning, where students learn through systematic exploration and investigation of problems or cases on their own, with appropriate support from their teachers.

Problem-based learning (PBL) is not an ordinary curriculum with problems added, but instead the problems are the curriculum, and in going about solving those problems the learner seeks the knowledge of disciplines, facts and procedures that are needed to solve the problems. The aim of PBL is not only to solve particular problems in a given discipline, but in the course of solving such problems, the learner is expected to acquire knowledge, content-related skills, self-management skills, and attitudes of professional wisdom.

The most important aspect of PBL is that learners will interact strongly with what is
being learned and feel that they have some choice in their own curriculum and in how to learn and what to learn, desires expressed by both HTM and AP students. In PBL, the problems are real-life problems, and learners will not stop to wonder at the relevance of what they are doing, or at their motivation for doing it.

PBL can be used as a teaching approach to help integrate different areas of knowledge, as represented in Figures 5.4. It shows how teachers can incorporate PBL components into appropriate subjects in the curriculum and strengthen the vertical integration of knowledge across semesters for a student's three years spent at university in an undergraduate course.

![Figure 5.4 Integration of knowledge by problem-based learning (PBL)](image)

Figure 5.4 Integration of knowledge by problem-based learning (PBL)
Research into the use of PBL in higher education institutions in Hong Kong has demonstrated that students' performance improved significantly with the use of PBL. The worth of PBL was also shown in the approaches to learning adopted by students (McKay & Kember, 1997; Tang et al., 1997).

5.2.3.2.1 Project work as a teaching method

Project work is a useful teaching method for developing deep learning and understanding of a topic. It enables students to explore deeply a field or topic and thus provides personal ownership of learning and fosters independence in learning and creative problem-solving skills. Biggs (1987a) suggests that a deeper approach to learning has been found in project-type courses. Certainly in open-ended project work, where there is no single correct answer, it is not possible to obtain good grades by memorization. Instead, students are forced to take a deep approach in order to obtain the best solution to the problem posed and to provide justification of their solution.

Employers are also implicitly in favour of project-type work since they value the more general competences that project work is presumed to develop, specifically the ability to think critically and independently, the use of teamwork, communication skills, etc. A passage from the published report ‘Made by Hong Kong’ by Berger and Leicester (1997), cited by Jones et al. (1999), captures much of the spirit of what project work might foster in students:

Industry and universities should work together to create a new cadre of university students with the ability to work as members of teams creating and designing new products, processes and systems. They should be able to operate effectively beyond a single discipline and to combine deep
knowledge of scientific and engineering fundamentals with practical, real-world knowledge and hands-on experience.

(Berger and Leicester, 1997, cited by Jones et al., 1996, p. 77)

5.2.3.3 Teaching learning strategies / Learning to learn programmes

Many Hong Kong students are very passive in class because of cultural factors and prior educational experience, something that was also evident in this study. Students in their first year especially need some kind of programme which aims to change their concepts of learning and which provides them with study skills.

The idea of teaching learning strategies in the context of a subject or discipline in higher education is advocated by a number of researchers (Chalmers & Fuller, 1996; Hattie et al., 1996). They emphasize that “learning takes place best in a relevant context” and that “integrated learning programmes are more effective in developing learning strategies, as both the subject matter and the strategies for learning it are taught together” (Chalmers & Fuller, 1996, p. 50).

Learning strategies programmes (or learning to learn programmes) that are implemented in the early years of a course of study, and are followed up by continued learning support, have a greater effect on improving learning. Gibbs (1992) found that students in their first year were more responsive to learning strategies programmes, and more likely to adopt a deep approach to their learning, than third-year students, who adopted few of the learning strategies and rarely changed their approaches to learning.

The teaching of learning strategies is more effective when it is integrated with subject
matter, a finding that is supported by research projects conducted by the current author for first-year students in the PolyU (Tang et al., 1999; Tang, 2000).

5.2.3.4 Authentic and challenging assessment

In the active classroom, there should be a shift away from relying mainly on closed-book written examinations focusing on ‘bookish’ knowledge. Teachers should adopt a wider range of innovative methods of assessment that challenge students to think about and reflect on their learning experiences.

The assessment plan and tests should be devised before instruction takes place so that teachers know how and why they are going to assess student knowledge, skills and understanding. When assessment is designed up-front in this way, it becomes integrated and aligned with instruction, and not something apart from it.

Biggs’ (1996b) idea of ‘constructive alignment’ is useful in designing course objectives and assessments because research has demonstrated that when curriculum and assessment methods are aligned, the results of instruction are greatly improved. ‘Constructive alignment’ is a framework for helping teachers to set clear course objectives and assessments which aim for effective learning outcomes. The main principles in devising assessments are the following:

(i) Teachers need to be clear about what they want their students to learn, and how they would manifest that learning in terms of ‘performances of understanding’.

(ii) The performance objectives thus emerging need to be arranged in a
hierarchy from most acceptable to barely satisfactory, with the hierarchy becoming the grading system.

(iii) Students must be required to provide evidence, either by self-set or teacher-set tasks, that their learning matches the stated objectives.

This idea of 'constructive alignment' forms an important basis for decision making at all stages of the teaching process: designing the curriculum objectives; deciding the teaching methods to use; and selecting appropriate assessment methods.

Figure 5.5 summarizes the concept of an 'active classroom' in the teaching/learning context which aims to encourage deep approaches in learning. It serves as a framework for university teachers in making their teaching decisions, including deciding on course design, teaching activities and assessment.

![Diagram](image)

Figure 5.5 Model of 'active classroom' to improve student learning
5.3 Summary

This chapter has analysed and synthesized both the quantitative and qualitative findings of this study with the theories and issues discussed in other studies in the literature. It has critically evaluated the impact of the different learning contexts on the approaches taken by students in two departments at the PolyU and answered the four research questions raised in the study.

The implication of this study is that 'interactive student-centred learning' is vital to the quality of student learning. The concept of an 'active classroom' is being recommended to serve as a framework for university teachers in making their teaching decisions. Since it is not possible to prescribe a single classroom model or teaching technique that will work for all teachers, all subjects and all kinds of students, a shared vision of the 'active classroom' should be created through dialogue.
Chapter 6: Conclusion

In Chapter 5, comparisons were made between the research findings of this study with those reported in the research literature to arrive at some conclusions regarding the impact of teaching on the learning approaches adopted by the two groups of PolyU students, the HTM (Hotel and Tourism Management) and the AP (Applied Physics) groups. A framework of ‘active classroom’ was introduced and recommended to achieve an improvement in student learning. This final chapter will (i) provide a summary of the contribution this study makes to the understanding of student learning; (ii) examine critically the methodology used in this study, which is of relevance to other researchers seeking to investigate student learning; (iii) analyse the limitations of the study and make suggestions for further research; and (iv) discuss the implications of the study for staff development.

6.1 Contribution of this study to the understanding of student learning

(i) The outstanding finding of this study is the significant drop in the surface approaches to learning adopted by HTM students after one year of university study. This drop must be considered the result of the ‘active student-centred learning’ environment created by the HTM teachers. The main characteristics of the HTM teaching context are:

- motivational context
- learner activity
- interaction with others
(ii) The quality teaching in HTM had a significant impact on the quality of student learning, and this in turn was strongly related to the conception of teaching held by the HTM teachers. Most teachers adopted a student-centred teaching approach, and motivated students to engage in their own learning processes with the aim of changing their students' conceptions of learning.

(iii) The assessment plan in HTM is integrated and aligned with course objectives and teaching. Most HTM teachers know how and why they are going to assess their students' knowledge, skills and understanding.

(iv) Students' approaches to learning are influenced by many contextual factors:
- Active learning encourages a deep approach, i.e., students learn better when they are actively engaged in their learning rather than when they are passive recipients of knowledge transmitted to them.
- The course design that emphasizes a process of engaging students in learning encourages deep learning.
- Assessment methods emphasizing reproduction rather than understanding encourage a surface approach.
- Insufficient time and heavy workloads encourage a surface approach.
- Excess material in the curriculum encourages a surface approach.

(v) Assessment dominates most students' thinking to a considerable extent. Students have clear views as to how to pass their courses and what they have to do in order to gain good marks. When assessment systems reward a surface approach, students will adopt a surface approach to learning.
Most students have worked out the specific requirements of their new academic environment after some time at university. As they perceive the need for a change in their learning approaches, they make the change.

Learning has been considered an active process in which students construct their own knowledge and understanding, while teaching is considered to provide the context in which learning can take place in order to achieve desirable learning outcomes. The concept of 'active classroom' provides a framework for course design, teaching activities and assessment to assist teachers in considering their teaching process.

6.2 Critique of research methodology used in this study

The study revealed two very different learning and teaching environments within one institution, one encouraging deep approaches to learning and one surface approaches to learning.

A rich database of both quantitative and qualitative data provides an advantage over many studies into student learning which use either quantitative or qualitative methods. There is much discussion and argument in the educational research literature about the merits of using either qualitative or quantitative research methods, while this study has been able to show how qualitative and quantitative approaches can be used in complementary ways.

This study used the Study Process Questionnaire (SPQ) developed by Biggs (1992) on
two occasions, with an interval of one year between them, to gather information about students' individual and common patterns in their approaches to learning, and about the changes in individual students' learning approaches. The student and teacher interviews, conducted after the questionnaire surveys, provided evidence that there are a numbers of factors relating the teaching contexts of the two departments, HTM and AP, which have an impact on the quality of student learning.

In this study, the use of the SPQ and interviews with students and teachers provided a very rich insight into students' and teachers' learning / teaching approaches, motivation, and learning / teaching activities taking place in the two departments. SPQs and interviews served effectively as detailed evaluation of the courses in the two departments, and this approach is recommended as an appropriate methodology for teachers and administrators who would like to understand the approaches to learning taken by their students, and to strengthen their students' awareness of their own learning approaches.

The SPQ is a convenient instrument for teachers who would like to evaluate their teaching effectiveness by repeated applications of the SPQ, as used in this study. It is not recommended, however, to use the SPQ as the sole indicator for an evaluation of teaching, or for understanding the reasons for the effectiveness of teaching, since the design of the SPQ was based on the strategy and motives used by students. It is always difficult to understand the reasons for any changes in student learning approaches when using statistical measurements.
6.3 Limitation and further research

Undoubtedly the results of this study are useful; however, some limitations of this study should be acknowledged critically. One major weakness is the small sample size, which means that it is difficult to generalise from statistical data.

Additionally, the one-year period of investigation in this study might be too short to measure changes in the learning approaches of students. A longitudinal study using the SPQ for measuring the learning approaches of students after a longer period of time, and perhaps for every year of their course until graduation, may provide more valuable findings for further research.

Further research in the same area is presently in process and a follow-up stage of this study will evaluate the two departments over the whole course of three years. The SPQ will be administered to the same groups of students in the first semester of their third year and again before they graduate. Student interviews will also be conducted to evaluate students' overall learning experiences throughout the whole course.

This study, in order to limit its scope to something doable by a single researcher in a limited period of time, only compared students’ approaches to learning in two departments. The results showed that these two departments were very different from each other. The students’ learning experience is inevitably framed and affected by different departmental cultures since no two departments are the same. However, this comparison will allow teachers in different disciplines to see what can work for students in other disciplines, and what may also work for their own.
It may be argued that these two departments should not have been compared as there were so many differences between them regarding teaching and learning theories. Accordingly, it would certainly be useful to compare courses within engineering or business departments, rather than across different disciplines or departments. Hence, future studies of the quality of student learning and approaches to learning should be extended, not just in sample size but also in the range of disciplines represented in the courses studied.

One important area worth further research is the relationship between approaches to learning and academic performance. One of the main aims of this study was to determine a possible correlation between students’ approaches to learning and their GPA scores; however, no firm conclusion could be reached. One reason for this is that the GPA scores provided by the two departments had not been broken down into grades for each subject. Measures of students’ academic performance by GPA are of course questionable when it is not clear what outcome is really being measured. Consequently, further studies will need to use individual subject scores, and analysis will need to determine correlations between them and learning approaches. It is hoped that a significant pattern will be shown regarding the correlation of certain subjects with a surface approach, and of other subjects with a deep approach. Such a result would provide a convincing picture for students as they could see how their learning approaches were related to their subject scores. At the same time, such a result would help teachers relate their subject to an encouragement of students to adopt either deep or surface learning approaches.

Another area that would benefit from further study is the relationship between
different kinds of assessment methods and approaches to learning. Innovative assessment practices have been in use at the Hong Kong Polytechnic University, such as learning contracts, reflective journals, peer assessment and student portfolios. Their effect on student learning is another interesting area for further investigation.

Interesting and worthwhile areas for further investigation have emerged in this study which point to tremendous research potential for the researcher who works with university educators on how to improve student learning.

6.4 Implications for staff development

The results of this study could, and perhaps should, be used to convince teachers and departments that their conceptions of teaching and teaching methods can have a significant impact on the quality of student learning. The study suggests that the framework of an ‘active classroom’ be adopted by university educators and administrators to assist them in creating a stimulating environment in which students may learn effectively. Staff development concerned with bringing about an improvement in students’ quality of learning needs to address at least two major issues, namely, how to change the conception of teaching held by teachers, and the development of an awareness of what constitutes quality teaching and learning among university teachers.

6.4.1 Changing the conception of teaching

This study has shown that many of the contextual factors impacting on students'
learning approaches are within the teachers' power to change, and are in fact moulded by teachers' conceptions of teaching. To develop an ‘active classroom’ in the Hong Kong Polytechnic University, a paradigm shift in teaching needs to take place, from a teacher-centred to a student-centred approach. Additionally, there is a need to change the way university educators conceive of teaching and learning. Getting teachers to change their conceptions of teaching will require a great deal of staff development.

Research evidence (e.g., Trigwell, 1995; Trigwell & Prosser, 1996b) showed that those teachers who conceive of learning as information accumulation to meet external demands also conceive of teaching as transmitting information to students, leading teachers to approach their teaching in terms of teacher-focused strategies. On the other hand, those teachers who conceive of learning as students developing and changing their conceptions, conceive of teaching in terms of helping students to develop and change their conceptions, leading teachers to approach their teaching in a student-focused way.

Since effective teaching is not simply a matter of applying general principles of teaching, educators need to adapt their teaching to their personal strengths and to their teaching context. Schon (1983, 1987) stated that the prime condition for effective learning is a commitment on the part of university teachers to reflect on their own practice with a view to improving it, i.e., for teachers to subscribe to an ethos of being reflective practitioners.

Reflective practice in teaching has been achieved by ‘action-learning’, according to Elliott (1991) and Kember and Kelly (1994), which involves being systematic about
changing one's teaching, and making sure the changes are in the right direction. Through ‘action-learning’, teachers are said to be able to create an improved teaching environment suited to their own context (Biggs, 1999). The target of ‘action’ is the teaching of the individual. The ‘learning’ in ‘action-learning’ refers not only to student learning, or even to learning about teaching, but to learning about oneself as a teacher, and learning how to use reflection to become a better teacher. “Learning new techniques for teaching is like the fish that provides a meal today; reflective practice is the net that provides meals for the rest of one’s life” (Biggs, 1999, p. 6).

Kember (2000) argues that staff development should not be carried out in the way it usually is, i.e., by teachers attending workshops in order to change their teaching behaviour. If teachers do not really believe in the new way of teaching, they will simply revert to what they were doing before as the post-workshop enthusiasm wears off. Kember argues that critical ‘reflection upon practice’ during action research projects is a vehicle through which deep-seated beliefs can be changed.

Kember (2000) undertook a very large scale action-learning project with university teachers in Hong Kong. They used action-learning projects as the mode of educational development to bring about changes in higher education in Hong Kong (Kember and Gow, 1992; Kember and Kelly, 1994; Kember and McKay, 1996; Kember, 2000).

One interesting example of action-learning research by Ho (1992) explored through a diary study how a teacher changed to interactive decision-making in three different classroom situations in the same course over a 10-week term. The first lectures seemed to act as a trial for making decisions about modifications to subsequent
lectures. Changes were also made in decisions about managing and organizing group activities in the three different classroom situations. The study provides an example of how teacher/researcher makes interactive decisions successfully and for the betterment of students.

6.4.2 Development of awareness among university teachers

One principle underlying the present study was that good teaching was about taking a student’s perspective in teaching. It was argued that good teaching in higher education involved a continuous awareness of

- students’ present learning situations;
- the contextual factors influencing students’ learning experience;
- student diversity in the classroom; and
- the need to continually evaluate and improve teaching.

The present researcher believes that one of the primary roles of educational developers is to work with university teachers in expanding their awareness of their learning and teaching situation. Since good teaching is about taking students’ perspectives, good educational development is about supporting university teachers in taking students’ perspectives. Educational development is less about the development of teaching skills and more about the development of an awareness of the students’ perspectives of learning and teaching situations or, in Paul Ramsden’s words:
There can be no single right answer to the problem of promoting the quality of teaching. That this perspective is by no means generally accepted is easily shown by reference to many policies of performance appraisal and staff development. The ideology of staff appraisal presents a one-dimensional model of better teaching which focuses narrowly on the quality of individual lecturers' performance and the inter-lecturer competition for excellence. Staff development that is focused on training lecturers to use teaching techniques is driven by an equally simplistic theory which says that if we add extra skills to each lecturer's repertoire, then we will get better teachers.

(Ramsden, 1992, pp. 253-4)

In this view, the teachers' awareness of their students' perceptions of their environment becomes all-important in the development of teaching skills. Teachers need to understand their students' experiences as a part of the process of developing their teaching. Hence, educational development is in part about working with university teachers to focus on and interpret their students' experiences.

Educational developers need to work with university teachers and aim to focus on changing teachers' conceptions of teaching. They also need to work with university teachers in looking at the aims of their subjects and programmes, and their teaching and assessment methods, from their students' perspectives.

6.5 Concluding remarks

Much of the present researcher's work in the Educational Development Centre in the PolyU is with university teachers. It is hoped that as an educational developer, my role is to maintain an awareness of how university teachers experience their teaching.
Additionally, it is to contribute to our Centre providing opportunities to help teachers develop a more complete understanding of their students and of their own teaching. Teachers need to be continually trying new ways of helping their students develop their understanding of the subject matter being taught.

The results of this study will be used to inform educational developers about the potential of the work in the PolyU. The researcher will share the findings and conclusions of the study with educational developers, university teachers and administrators, through workshops and seminars, and with the wider education community through conference attendance and paper publications. Last but the least, the recommendations from the study to teachers and departments are subject to modification according to particular departmental circumstances and particular student needs. If the study can get teachers and departments to understand the approaches to learning adopted by their students, and reflect upon what teachers and departments can do in order to improve students’ quality of learning, then it will have accomplished the aim of the research.
APPENDIX I: Study Process Questionnaire by Bigg's (1992)

What the SPQ is About

On the following pages are a number of questions about your attitudes towards your studies and your usual ways of studying.

There is no right way of studying. It all depends on what suits your own style and the courses you are studying. The following questions have been carefully selected to cover the more important aspects of studying. It is accordingly important that you answer each question as honestly as you can. If you think that your answer to a question would depend on the subject being studied, give the answer that would apply to the subject(s) most important to you.

How to Answer

For each item there is a row of boxes for a five-point scale on the Answer Sheet:

☐  ▫  ◨  ▪  ▲

A response is shown by making one of the five boxes for an item to fill the desired oval. The numbers stand for the following responses:

☐  this item is never or only rarely true of me.
▫  this item is sometimes true of me.
 ◨  this item is true of me about half the time.
 ▪  this item is frequently true of me.
 ▲  this item is always or almost always true of me.
Study Process Questionnaire

1. I chose my present courses largely with a view to the job situation when I graduate rather than because of how much they interest me.

2. I find that studying gives me a feeling of deep personal satisfaction.
3. I want top grades in most or all of my courses so that I will be able to select from among the best position available when I graduate.
在多數或全部的學科中我都想得到高分，因為在我畢業後，我將能選擇一份最好的工作。

4. I think browsing around is a waste of time, so I only study seriously what's given out in class or in the course outlines.
我認為博覽群書是一種浪費時間，因此我只認真地研讀那些在課堂上發放或已在課程大綱上列明要讀的。

5. While I am studying, I think of real life situations to which the material that I am learning would be useful.
當我國學時，我會思索現在所學的東西在現實生活中有多大用處。

6. I summarize suggested readings and include these as part of my notes on a topic.
我會將建議的閱讀資料做摘要，並把它們放在同一課題的筆記中。

7. I am discouraged by a poor mark on a test and worry about how I will do on the next test.
我會因測試失敗而感到灰心，並擔心下次測試的成績會如何。

8. While I realize that truth is forever changing as knowledge is increasing, I need to discover what is truth for me right now.
因為我知道隨著科學的進步，真理是會改變的，因此，我必須要尋找在現時什麼是真理。

9. I have a strong desire to excel in all my studies.
我有強烈的慾望要在所有的學科上比別人優勝。

10. I learn some things by rote, going over and over them until I know them by heart.
我是靠死記的方式來學習，一次又一次的背誦，直到我能熟記為止。

11. In reading new material I find that I’m continually reminded of material I already know and see the latter in a new light.
當閱讀新的資料時，我不斷想起已經學過的東西，並對這些東西有新的了解。

12. I try to work consistently throughout the term and review regularly when the exams are close.
我盡力在整個學期中不斷溫習。當考試臨近時，更定期複習。

13. Whether I like it or not, I can see that further education is for me a good way to get a well-paid or secure job.
不論我喜歡讀書與否，我明白到高等教育能助我他日獲得一份高薪或穩定的工作。

14. I feel that most topics can be highly interesting once I become involved in them.
15. I would see myself basically as an ambitious person and want to get to the top, whatever I do.
基本上，我覺得自己是個有野心的人，無論做任何事，我都要成為最出色的一個。

16. I tend to choose subjects with a lot of factual content rather than theoretical kinds of subjects.
我喜歡那些內容包括較多事實的學科，而不大選擇那些重理論性的學科。

17. I find that I have to do enough work on a topic so that I can form my own point of view before I am satisfied.
我發現我必須在一個課題上很用功，以致我能建立自己的觀點，才會感到滿足。

18. I try to do all of my assignments as soon as possible after they are given out.
我接到作業後，便盡快把它们做完。

19. Even when I have studied hard for a test, I worry that I may not be able to do well in it.
就算我在測驗前已好好地溫習，但仍會擔心自己可能考得不好。

20. I find that studying academic topics can be as exciting as a good novel or movie.
我發現研究學術性課題，就如一本好小說或一齣好電影那樣能令人感到興奮。

21. If it came to the point, I would be prepared to sacrifice immediate popularity with my fellow students for success in my studies and subsequent career.
如果在同學中受歡迎和在學業及將來事業上的成功有衝突時，我甘願放棄前者。

22. I restrict my study to what is specifically set as I think it is unnecessary to do anything extra.
我限制我的研究僅限於那些特別指定的資料，因為我認為沒有必要做額外的。

23. I try to relate what I have learned in one subject to that in another.
我嘗試把在一科中學到的知識與另一學科的聯繫起來。

24. After a class/lecture or lab I re-read my notes to make sure they are legible and that I understand them.
下課後或實驗課後，我會把筆記重述一遍，以確保它們清楚易讀及我能明白它們的意思。

25. Teachers/lecturers shouldn’t expect students to spend significant amounts of time studying material everyone knows won’t be examined.
老師是不該期望學生花太多時間去溫習一些人人都知道不會考的東西。

26. I become increasingly absorbed in my work the more I do.
我做事是越做越專心的。
27. One of the most important considerations in choosing a course is whether or not will be able to get top marks in it.

28. I learn best from teachers/lecturers who work from carefully prepared notes and outline major points neatly on the blackboard.

29. I find most new topics interesting and spend extra time trying to obtain more information about them.

30. I test myself on important topics until I understand them completely.

31. I almost resent having to spend a further three or four years studying after leaving school, but feel that the end results will make it all worth while.

32. I believe strongly that my main aim in life is to discover my own philosophy and belief system and to act strictly in accordance with it.

33. I see getting high grades as a kind of competitive game, and I play it to win.

34. I find it best to accept the statements and ideas of my teachers/lecturers and question them only under special circumstances.

35. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.

36. I make a point of looking at most of the suggested readings that go with the lectures/class presentation.

37. I am at polytechnic/university mainly because I feel that I will be able to obtain a better job if I have a tertiary qualification.

38. My tertiary experience has changed my views about such things as politics, my religion and my philosophy of life.
39. I believe that society is based on competition and schools, polytechnics and universities should reflect this.
我相信社會是建基於競爭之上，因此學校、理工及大學應反映這個情況。

40. I am very aware that teachers/lecturers know a lot more than I do and so I concentrate on what they say is important rather than rely on my own judgment.
我深信老師們比我識得更多，所以我較專注於他們認為重要的事上，多過依賴自己的判斷。

41. I try to relate new material, as I am reading it, to what I already know on that topic.
我嘗試把現在閱讀的新資料與那些在同一課題上已知道的聯繫起來。

42. I keep neat, well-organized notes for most subjects.
我大部份學科的筆記都是整齊而有系統的。
BACKGROUND INFORMATION

DIRECTIONS: Indicate your response by ticking ☐ the appropriate space under each question.

Student No: ___________________ E-mail: ___________________ Tel No: ______________ 

Age
☐ 22 or younger 
☐ 23 – 27 
☐ 28 or above 

Sex
☐ male 
☐ female 

Are you interested in your study?
☐ I am enthusiastic about it.
☐ I like it.
☐ I am more or less neutral about it.
☐ I don’t like it.

How well do you like your department?
☐ I am enthusiastic about it. DIRECTIONS: Indicate your response by ticking ☐ the appropriate space under each question.

Student No: ___________________ E-mail: ___________________ Tel No: ______________ 

Age
☐ 22 or younger 
☐ 23 – 27 
☐ 28 or above 

Sex
☐ male 
☐ female 

Are you interested in your study?
☐ I am enthusiastic about it.
☐ I like it.
☐ I am more or less neutral about it.
☐ I don’t like it.

How well do you like your department?

☐ I like it.
☐ I am more or less neutral about it.
☐ I don’t like it.

How well do you like university?
☐ I am enthusiastic about it.
☐ I like it.
☐ I am more or less neutral about it.
☐ I don’t like it.
How often do you go to the library?
- more than 5 times a week.
- 2-3 times a week.
- once a week.
- Seldom.

What is the average time you spend per week in studying (excluding class time)?
- More than 20 hours
- 14 to 20 hours
- 7 to 13 hours
- Less than 7 hours

How do you study?
- I like to study by myself.
- I ask my classmates or teachers when necessary.
- I often study with several classmates.
- I participate actively in some study groups.
APPENDIX II: Short questionnaire

THE UNIVERSITY EXPERIENCE

Thinking of your own experience at this university, to what extents are you satisfied with each of the following? The responses are numbered from 1 to 5, with the lowest points and highest described. Please tick (✓) the number that best indicates your impression on this five-point rating scale.

<table>
<thead>
<tr>
<th></th>
<th>Very dissatisfied</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching in general</td>
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<td></td>
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<tr>
<td>Course quality in general</td>
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<tr>
<td>Course structure and organization</td>
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<td>Choice of subjects</td>
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<tr>
<td>Assessment and workload</td>
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</tbody>
</table>

The next two ratings refer to relationships among people at the university. Again, thinking of your own experience, how would you rate these relationships on the five-point scales?

<table>
<thead>
<tr>
<th>Relationship with other students, student groups, and activities</th>
<th>Very dissatisfied</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive, Uninvolved, Sense of alienation</td>
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<tr>
<td>Friendly, Supportive, Sense of belonging</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Relationship with teaching staff members</th>
<th>Very dissatisfied</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote, Discouraging, Unsympathetic</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Approachable, Helpful, Understanding, Encouraging</td>
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<td></td>
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</tbody>
</table>
Dear Student,

*Student Process Questionnaire*

We appeal your participation to a piece of research that we have been undertaking on students' attitudes towards their studies. The Student Process Questionnaire developed by John Biggs (1992) is chosen to measure the approaches to learning adopted by the PolyU students. In order to trace the effect of university education on an individual student, your information (student number) is important for comparison at a later stage. We assure that your response will be held in the strictest professional confidence.

*The information obtained from you will provide new insight to administrators and teaching staff who shape and teach the programmes that will benefit student learning.*

Thank you in anticipation for your participation.

Yours sincerely,

Dr KS Lau
Associate Professor
Dept of Applied Physics

Winnie Tang
Educational Development Officer
Educational Development Centre
October 10, 2001

Dear Student,

Student Process Questionnaire

We suppose you still remember that you filled in one of the questionnaires previously. This is part of a piece of research that we have been undertaking on students' attitudes towards their studies and we thank you very much for your participation. The Student Process Questionnaire developed by John Biggs (1992) is chosen to measure the approaches to learning adopted by the PolyU students. In order to trace the effect of university education on an individual student, your second participation this time is vital to this study. We assure that your response will be held in the strictest professional confidence.

The information obtained from you will provide new insight to administrators and teaching staff who shape and teach the programmes that will benefit student learning.

Thank you in anticipation for your participation.

Yours sincerely,

Dr KS Lau
Associate Professor
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APPENDIX IV: Samples of student interview transcripts

From AP

Student Interview Transcript #1
Interviewee: AP Student #7 (From No biased to Deep)
Interviewer: Winnie Tang
Interview on January 22, 2002

Q: How do you study? Could you describe what you do in lecture and tutorial?
A: The lecturers of this course are pretty good. However, they provide us with a lot of notes that I don’t have enough time to read them all. Besides the notes, I also read reference books. At school, I pay attention to the lecture where I jot lots of notes. After school, I usually study based on these notes. If I find the information on the notes are not sufficient enough, I would consult reference books.

Q: Can you tell me what you are doing or thinking in lecture and tutorial?
A: The lecturers use PowerPoint. If I find something important is missing in the notes, I jot them down. I use my own words to write notes of lecturers’ explanation. Once I don’t get what they say, I would ask my classmates for help. Even though I seem to get what they say, I may fail to read what I write down. To solve this problem, I read the reference books.

Q: You also ask your lecturers?
A: Ask my classmates first then my lecturers.

Q: Are you lecturers willing to help you?
A: They are very nice, particularly Prof Y who doesn’t mind spending over an hour to help us and give me extra information on something that we should learn. All in all, most of them are very good.

Q: How about tutorial?
A: In my case, the lecturers also lead our tutorials. In tutorial, we are divided into several groups for discussion. We also ask questions about our school work. For examples, if we have to submit an assignment this Friday, we would ask questions about this assignment in the tutorial session on Wednesday. If we don’t have any question, the lecturers would ask us to do calculations.

Q: Do you recognize any difference of your learning approach after you came to study in the university?
A: I'm still using my previous learning approach.

Q: How do you define “learning”?
A: Learning something that I like. Not just the books. It applies to many other things. Since I like Physics very much, I don’t regard it as formal learning.
Q: Besides going school, what other ways do you use to learn about this subject?
A: I don't feel like studying when I'm studying this subject.

Q: You take it as one of your interests?
A: For example, writing a lab report. I have to submit a 4-page report. In fact, it's not really difficult because there are a lot for us to copy from the manuals. Though we can do that, I would like to search the internet for more information about the background and theories. I attach these findings to my report so that you can see my report is over 4 pages. Most importantly, I don't find it very difficult. Some of my classmates always say that it's pointless to write down so many extra things for a 4-page report. I don't agree with them.

Q: Do you think this helps you to learn? Does it help you in the exams?
A: Final examinations...not very helpful. Those questions are too popular. Those notes are sufficient enough to answer those questions. The information that I find in the internet helps me to understand the topic better but it doesn't help me much in the exams. I think I learn more in this way.

Q: So, it's mainly out of your interest?
A: For exams, we usually read the notes and do past papers of the previous 5 years. We categorize the questions based on what chapters they are related to. Then, we know which chapters have more questions than the others and we put our focus on these chapters. Interestingly, we can see that the questions repeat in alternate year. Our lecturers usually give us the solutions. As I said before, if I'm going to write a lab report, I study all the equipment for a better grade. However, for exams, I see that the questions are more or the less the same every year so I don't have do extra work to prepare myself.

Q: So, for this kind of exams, students don't have to pay much effort...
A: It's not surprising that other classmates get higher grades than me. Like the others, I also read the past papers because I want to know what the questions look like. Besides the past papers, I also study other materials.

Q: It seems that you look for a thorough understanding of the materials. Did you use the same learning strategy in the past?
A: It's the same. Since young, my parents have not cared about my study. When I was young, I studied on my own. I trained myself to memorize the answers by putting a paper to cover the answer. Workbook first and then textbook.

Q: You look for more information yourself, right?
A: For public exams like HKCEE and HKALE, I didn't just memorize the answers. Here in the university, I'm lucky that my lecturers provide us with sufficient notes which are uploaded to the website. It's unnecessary for us to find extra information. Compared with me, my peers in other faculty are not very lucky that they have to change their learning approach.

Q: So, you didn't have to change your learning approach even in the university. It seems that you don't rely only on the lecturers. You're quite independent in learning.
A: Actually, I wouldn’t look for extra information if they have already given us excessive materials. I look for more if there is not enough information, especially when I’m doing assignments.

Q: Roughly speaking, for how long do you spend your time at the library?
A: I don’t like studying at the library. I usually study at home and study for the tests and exams in the study room. Actually, I have some part time jobs that I only have time to study after 9pm.

Q: How much do you need to work as a part time?
A: About 4.5 hours a week.

Q: How much do you have to spend on your assignments?
A: I usually start doing assignments at 10pm and then go bed at 1 or 2am. I’m not good at computational language. So, I need more time to finish writing a computer program. For some of my classmates, they know computational language pretty well. The lecturer may think that the rest of the class is the same. To be frank, most female students of my class don’t understand. Those who know it so well claim that it’s actually applied mathematics. Unfortunately, I haven’t studied this subject before. That’s why. Even though they give me a detailed explanation, I still don’t quite understand…. For example, if we are given a week to write a computer program. I won’t start until 3-4 days before the deadline. If I don’t know how to write, I would send email or icq other classmates for help. I know it’s wrong to copy the answer from the others but I really don’t get it even though they send me their answer.

Q: So, what grade did you get at the end?
A: C+. I have taken this subject for 2 years and I’ve still got C+ for 2 years.

Q: How come? You have put efforts on this subject.
A: Not really. We have a lecturer called VC Lo. If we have to do lab work today, he asks us to submit a lab report tomorrow. The problem is I come home very late say 10pm. I can see everyone still working hard on the lab report until 3-4am. We know that the computer programs that we write have errors but we don’t know how to correct it. So we just leave it alone. That’s why we get low marks.

Q: Did you copy it from the others?
A: In fact, we can find some parts in the notes. Usually, we learn the model and then we need to modify it to fit in other situations. Even tough we put all the parts together and modify it, it doesn’t mean the program works as we expect. The lecturer knows it. We’ve got to understand it before we copy the answer. We usually have to write hundreds lines for a computer program that it’s quite impossible to understand all of it.

Q: Which subjects do you think help to improve your problem solving or critical thinking skill?
A: Life and Death (General Education). China Superstitious Society (General Education). These 2 subjects were taught by Dr Z. I quite like him. I found him teaching quite good. I didn’t feel bored in his class. Previously, I didn’t
like theory in arts subjects. In his class, he first talked about the theory and then showed us some movies to illustrate how it was related to our daily life. After class, I would think about the people around me. I would try to see why they behaved in such a way. As for my major study, there are not any subjects which help to improve my critical thinking skill. Maybe, they are too academic. They emphasize on calculation. I think General Education subjects can really make me think broadly about the world.

Q: So far, do you understand the course objectives or do you know why the curriculum is structured in this way?
A: In Year One, we studied Mechanics, Wave and Optics. They’re about old Physics. In Year Two, we started to learn about Modern Physics, Contact Mechanics. These subjects were brand new. We learned old stuff in Year One. It’s like a revision of the materials in F6 & F7. We began to learn new things in Year Two. We tried to compare the old theories and the new theories and see why the old theories failed to explain certain phenomena. Modern Physics is quite good. This subject helps me to understand the theories that I didn’t understand before. The lecturer also prove the formula to us.

Q: Anything helpful to you?
A: I just know something. Since I haven’t started working yet, I don’t know how it can help me. I haven’t thought about how this subject is related to my career. I take it because I’m interested in this course. PolyU is the only one which offers this subject… it’s very hard to say. I heard from my senior peers that they worked as Quality controller or sales. I have no interest in these works.

Q: So, what do you expect to do after graduation?
A: I plan to further my study… you know, the poor economy…

Q: Then, why did you take this course?
A: Actually my first choice is Chemistry at HKU. I failed to get it. After consulting from other people, I finally chose Applied Physics. Even though I had spent more time studying Chemistry than Physics for the public exams, I got a lower grade in Chemistry than Physics. Strange.

Q: Do you know why you got a higher grade in Physics? Can I say that you understand Physics better than Chemistry?
A: Maybe Chemistry requires a lot more memorization that I don’t enjoy. For Physics, you can easily write out the answer if you understand the theory. To make the final decision, I took my previous exam results and my friend’s advice into consideration. Other than that, this course has something related to Engineering. It’s possible for me to study Master in Engineering. I can also switch to study Electronic Engineering or something about computer programming. I have more programs to choose. If I chose Chemistry, I could only study Master in Chemistry.

Q: Do you think the teaching approaches of the teaching staff here have changed your study strategy and learning style?
A: Most of the teaching staff are very nice. Of all, Dr A is the best. He taught us Electricity and Magnetism in Year One. He’s very nice. He really cares about
his students. He actively approaches us and asks how we are doing. He also answers all of our questions. He's friendly. We talk about daily life. He still remembers my name even after a year. He's like my secondary school teacher. He doesn’t mind answering our calls even in midnight.

Q: To sum, what’s good and what’s bad about this course?
A: In other universities, the emphasis of the same program is put on Physics. The one here is quite balanced on Physics, programming and engineering. The only thing that I want to complain is that we have too many subjects to take in one semester. 6-7 subjects in one semester. For every subject, we have to do many assignments and take the final exam at the end. I find the workload quite demanding.

Q: Jo, last year you filled out the student process questionnaire (SPQ) and it showed that you didn’t have any tendency to fall into any category. This year, you filled out the same questionnaire again and it showed that you tended to be a deep learner. Do you know why you have such a change?
A: Perhaps, I become more serious about my academic performance. I didn’t realize the importance of my GPA when I filled out the SPQ in the first time. Those Year One subjects were similar to what I learned in secondary school that I didn’t need to pay much effort. Later, I became more serious about my GPA. Since the weighting of Year Two subjects was heavier, I paid more efforts to “defeat” my classmates and get higher GPA.

Q: How do you prepare for the exams?
A: I set my own timetable. I usually start studying one month before the exams, sometime after mid-term. I get more details about the subjects after mid-term. For each subject, I reserve a certain period to study it. I’d try my best to stick to my timetable. It’s true that I spend more time on those subjects that I like more.

Q: What makes you like those subjects?
A: The lecturers. And the subjects that I get higher grades. For example, I didn’t have pay much effort to get a good grade in computer programming.

Q: What’s your GPA in the last semester?
A: 2.XX.

Q: How about first year?
A: 3.IX.

Q: Do you form any study group?
A: My classmates like to go school together. They like to ask the teaching staff and study at the library together. They even stay overnight in the campus. Unlike them, I enjoy studying at home more.

THE END
Q: Can you describe what you do during the class?
A: Just like in secondary school, the lecturers give us lectures and handouts while we jot down the key points. When the lecturers elaborate with examples, I just write down some keywords and then listen to their elaboration. Later in the exam, I know how to use these examples to answer the questions. When I'm jotting down the notes, I pay attention to the key learning objectives frequently mentioned throughout the lecture. What do I do during the class? In large lecture, when I don't understand I ask my classmates. If the lecturer is elaborating with examples which are familiar to me, I would chat with my neighbors for a while. Sometimes, we tell jokes and eat snacks.

Q: What about after class? What do you do after the class?
A: In the previous semester, my schedule is very tight. I have lunch or walk around outside the campus during breaks. If the break is only one hour long, I would have lunch at the student canteen. I usually do the assignment right before the deadline but I make sure that I have enough time to get it finished on time. For group project, we try our best to arrange sometime for discussion. Then, each of us does our own part and later we put different parts together.

Q: Can you tell me more about your study habit?
A: Nothing special. I'm not a person who studies for the exam only. Every time a lecture is finished, I go through the lecture notes at least once. During the lecture, we seldom chat because we as undergraduates should pay respects to the lecturer. We listen to the lecture carefully and jot down some notes. After the lecture, I go through the notes. If there are some readings or assignments for us to read or do, I would do it at the weekend. Nothing is really special.

Q: If you have any problem or you don't understand, what would you do?
A: I seldom have problem. In fact, the lecturer provides enough readings that I can find the answers myself. But I do have problems. What I do is to approach the lecturer for help or ask him/her to explain again.

Q: Do you study on your own or with your classmates?
A: I'd prefer studying on my own. I think none of us is really studying when we cluster together, even if we plan to study in the library for 1-2 hours. Some of us go out for snacks. When they come back, it's time for us to leave. I'd prefer studying at home. That is only my habit. The home environment seems to be more quiet. I rarely study at school. Most of the time, I study at home.

Q: Then, how much time do you spend on your studies?
A: Not fixed. But how much....uh....
Q: How do you study?
A: Go through the notes and pay more attention to the key points. Think about what is taught today and see what I don’t really understand. Then, I would mark it down and ask the lecturer for help later. As for the readings, I read as much as I can. If you ask me how much time I spend on my studies, I would say about 2 hours a day. It must not be over 2 hours.

Q: When you read the notes or the readings, what do you do?
A: I mainly go through the notes. I skip those things that I understand. I only read further for what I don’t quite understand or I don’t agree with. I don’t challenge but I may raise up the issue during class or ask the lecturer.

Q: You’ve just mentioned that you’re not studying purely for the exams. Has your study habit changed after you came to the PolyU?
A: Here, I can organize my own timetable, so, I have more time to do my personal business. When it’s time to submit assignment or it’s time for test, I definitely reserve sometime for it. I seldom go through the readings again if there’s no exam or assignment.

Q: Any difference in your view towards learning?
A: I don’t think there is any difference. In the past, I might just read the textbooks. And now, maybe I learn to take a broader view of thinking. My major study is hotel management and the class makes me take a global view on certain issues and I’m no longer just focusing on Hong Kong. These issues are usually influenced by a number of surrounding factors. There are hotels at different levels. The ways they serve their customers are depending on what classes they belong to. My teachers always highlight this point. As a result, I pay more attention to this area. Besides, I often need to seek information on my own because the information on the handouts or the lecture notes is not enough for me to complete a certain task. So, I go to the library to seek for more references, e.g., journal articles, in order to help me to complete the assignment or whatever.

Q: Do you think the teaching approach of the teachers in the PolyU has changed your study habit?
A: Yes, I think so. My way of thinking is getting broader. I don’t just consider myself. Instead, I consider what the other people think. I’m no longer focusing on Hong Kong but taking a global view on the issues.

Q: Of all the subjects that you’ve taken, which one do you think has changed your way of thinking?
A: Resort Management.

Q: In which program?
A: Diploma in Hotel Specialism. Are the current ones also counted?

Q: Yes.
A: And Human Resources Management.
Q: Which subject do you think has brought these changes to the way you think and the way you learn? Can you name out which lecturers?
A: Leisure Behavior. This subject has taught me to take a global view. To take an example, I need to study the leisure behaviors of all customers in order to improve the hotel service. Front Office as well. This subject has taught me to consider the needs and demands of different customers. It's very important to have some knowledge of the market to scope the targeted population. And also Marketing. I didn't take this subject before I came here. This subject requires me to make decisions based on all aspects. We are not expected to memorize the contents. Rather, we are required to apply our prior knowledge to solve a case problem. For this subject, we had to do a group project. The lecturer did not tell us how to do the project. Instead, s/he gave us the marking criteria for reference. Throughout the process, we needed to select a product and the methods to promote this product. From this project, we learned how to promote the product and do research. All of the tasks were completed by the team itself. This was my first project in the program. Although it was a little bit difficult to handle, it was a very good experience and it taught me how to do a project so that I knew what to do in the next time.

Q: Besides this subject, which subject or teacher has changed the way you learn or the way you think? Or which teaching approach helped you to learn?
A: Hotel visits. We paid visits to some local hotels.

Q: Which subject?
A: Introduction to Front Office Operational Management. During these visits, we watch the actual working operation in the hotel, e.g., how the staff handle the customers professionally at the front desk and how they explain the special features of different types of rooms to the customers. It’s different from the lecture that I can see what the actual things look like. This can consolidate my knowledge of these things. What I see at these visits are very different from what I imagined. What else...

Q: What teaching approach do you think is the most useful to your learning?
A: I don’t like too much memorization nor too much fact. I’d prefer more real-life examples, which are better than just a textbook. Actual experience is better than piles of print information. I heard from my classmates that they found the lecture notes very boring. It’d be better if the lecture is more interactive. It’s pointless for the lecturer to keep talking to us regardless of whether we understand what he’s talking about. I find it’s better to study at home than to listen to the lecturer.

Q: What do you mean by “interactive”?
A: For example, to ask us questions or to give us readings that help us to understand. After elaborating with some examples, the lecturers could give us one or two-page readings to help us to understand the topic better.

Q: Do you enjoy this program?
A: Yes, I do. Why? The autonomy. I don’t have too much pressure. I know that some other programs are pretty tough. Besides, the subjects are quite practical that we’re not required to memorize the facts. We don’t understand the topic if
we just read the books. So, we need to explore more and observe more carefully the actual happenings in order to understand what the lecturers say.

Q: Do you mind telling me your academic results in the last semester? Satisfactory?
A: Satisfactory. I've got B in most subjects. But not many A.

Q: Your study looks successful. What factors do you think make it successful?
A: I'm a Christian. I knew that I might not get a good grade in some subjects. Then, I would pray. By doing so, I felt peaceful and less stressful. On the other hand, I'm not a person who only study before the exams. As I said, I go through the notes from time to time. I won’t give it a rush. Also, I believe the teaching approaches of the lecturers make a difference. If the lecturer just recite the book, I’d not put this subject as the first priority. If I can get what he means by reading the notes, I’d study this subject later. I like the subjects which require me to think a lot. I would take these subjects as the first priority.

Q: Which subjects are you referring to?
A: Leisure Behavior. Front Office, a little bit. Marketing. Tourism. These subjects were very special.

Q: So, these subjects need you to think a lot. Are these subjects difficult?
A: Not really. They need a lot of thinking instead of memorization. It’s hard to explain. Basically, I like the lecturer to give me examples to criticize. I don’t like him/her to give me all the answers.

Q: So, do you participate in the class? Like asking questions?
A: Yes, I do. I would ask the lecturer if I don’t understand. Usually I do it in the tutorial. Time is really short in the lecture. I think I’m quite active participating in the tutorial as I ask quite a lot.

Q: To wrap up, has your study at the university changed your way of learning?
A: No much has changed.

Q: What do you expect to do after graduation?
A: I would like to work in the hotel as a frontline officer.

Q: Does it change your way of learning?
A: You mean to spend more time on it? I don’t think so. Besides English, I seldom spend more time on certain subjects unless I need to rush some deadlines.

Q: Thanks a lot.

THE END
**APPENDIX V: Samples of teacher interview transcripts**

*From AP*

**Teacher Interview Transcript #1**

*Interviewee: AP Lecturer #4*

*Interviewer: Winnie Tang*

*Interview on May 18, 2002*

**Q:** Can you share with me how you teach your students? What kinds of activities do you provide to your students?

**A:** There is a standard module in PolyU. We have 3 lectures plus one tutorial. In this subject there are many things to teach. Usually, notes are distributed to the students. These notes are not in full detail because in this subject we need to cover many chapters and readings. If I ask them to read the books, the students don't know where to start. So, I prepared these notes for them. In the notes, there are some activities for them to do so as to make the class interactive. But only for Optics. We don't have time to do so for Physical Optics.... There are some notes with graphics and simulations uploaded to the Internet. Some of the PowerPoint slides can be found in the WebCT. I provide all of these besides the paper notes because I think the students might prefer something fancy and something that they can get a clear physical picture. Basically the PowerPoint slides are supplementary to the notes. There are only some differences. Besides these, there are some exercises for them to do. The solutions are also provided. I try my best to give everything to help the students. At the same time, the University expects the students to learn something more advanced intellectual skills. So, in the class I always ask them questions. However, most of the time I answer them myself. I don't know. Students are not used to answer questions. Maybe they're afraid that they give the wrong answers. So I answer the questions almost everytime, and that could slow the pace down a bit. And now, I try to make a balance on them. Students don't like it. It is their habit that they don't have to think. In the past, the students were seldom asked to divide or prove a formula in the exams. But now, they need to do so in the exams. You know, they won't study it if they are not asked about it. If you say this is not included in the exams, they would cross over it. It's a failure. It's true that you will find your SFQ score is low if they score low in the exams. The SFQ score reflects the performance in learning and teaching. The score is low if they think they've learned so few. Comparatively, we have low SFQ scores because the standard of our students is low.... Gradually, I give them more work examples in the class. I find that the students don't understand something regarded as trivial and fundamental. They even don't follow something straightforward.

**Q:** What do you expect your students to learn from your class?

**A:** There are two things. This is a foundation subject leading to other subjects like Modern Optics. Students can get a lot of information about optical phenomenon and optical instruments. On the other hand, in this subject student's thinking skills can be developed—analytical skills and other all-round skills. Very few of them can find a job in optics. So general knowledge and skills are important to them.
Q: How do your students find this subject?
A: The same for all subjects. They do what they need to do; they take the exams they need to take. Basically, they should have more interests in this subject because you see light when you open your eyes. For some students, they should have learned a lot about optics in the secondary school. This subject should not be very difficult.

Q: How do you assess your students?
A: 30% coursework and 70% final exams. As mentioned before, I've started to give them questions requiring them to think more or to make analysis. Usually, the students do not score high for this kind of questions. It is believed that they are good at memorization but this is not true. They fail to write out the definitions. In recent years, they don't reach the standard line in all areas.

Q: Can they choose not to answer those “thinking” questions?
A: Some are compulsory while some are optional.

Q: Can you tell me the reasons why they are incapable?
A: Perhaps their foundation is not strong enough. Actually they don't have to memorize the formula. Before the exams, they are given a card on which they are allowed to write down anything they want. They can bring this card to the exams venue. I find that it doesn't help the weak students at all. They write a lot of useful things on the card but they don't know how to use them to answer the exam questions. They don't have good memory and they don't have comprehension skills.

Q: Some students told me that they needed to do more exercises to drill their skills. What do you think?
A: It's pointless to drill if they don't understand. Everyone knows how to use a formula in this situation. What they need to learn is how to use it in another situation and what to be modified in order to use it. They have problems in using the formula. They fail to read the questions. They miss out important things mentioned in the questions. They also forget the radius is half of the diameter. Some of them use wrong units. There are a lot of careless mistakes. It's useless to practice more if they are not aware of these mistakes. They should do practice after they understand. Then, I believe it helps a lot if they practice more.

Q: How often do the students approach you?
A: Quite often. They come to me for help on mathematical problems.

Q: How do you help them?
A: I definitely help them if they have problem. If they don't know how to solve the formula, there should be something they don't understand.

Q: What kinds of students come to you? Smart students?
A: Usually those hardworking students. It doesn’t mean they’re smart. Now what they learn about Physics are not really difficult. Hardworking is a very important factor. There’s nothing you can do if they don’t work hard.
Q: Then, how do you know how much they understand the subject?
A: It’s very hard to know. Through tests and exams, we should know whether they understand. Nevertheless, the students are not hardworking enough. In the past, we memorize what we have understood. But now, they don’t do the same. After a while, they forget about it. They don’t know what to memorize. It’s useless if they memorize what they don’t understand.

Q: Is it true that there’re a lot of things they need to memorize in this subject?
A: Memorization is a basic step. There’s something that you need to memorize before you’re going to understand it, right? If you don’t know the definition, you wouldn’t know what it is about. Secondly, you can’t write out the laws and principles in your own words because they are written in the most precise wordings. If you write in your own words, there’re must be some mistakes. This is very basic. Of course, it’s easy to memorize them if you understand what they are about. You have to avoid mistakes on the facts. At least they should write out the essence. Our students are not good in English and they don’t memorize the key points. When you look at what they have written, you easily find that their concepts are wrong. If they don’t know about the definitions, how can they move on?

Q: Some students told me that they’d work harder if the lecturers care about them more. What do you think?
A: I don’t know. I treat them as my sons. I see my students more than my family.... I try to get close with my students. There’re only 30+ students in the class. It’s easy for me to know their names. It’s an act of intimacy to call their names. They know that I will call their names if they misbehave. So, to avoid it, they stop misbehaving.

Q: Have you used any special teaching method to improve their learning and learning attitude?
A: I always tell them what is right and what is wrong. In recent years, we need to speak English in class. You know, it’s difficult to quote those Chinese “maxims” in English.... Some students comment that Physics is quite useful to them in the future. Previously, they don’t think so. Nowadays, we want to develop an information society. It’s not useful to learn something information-wise. Rather, it’s more important to learn the process. Learning Physics is to train our thinking skills.... I tell them all of these once I’ve got the chance.

Q: Have you used any special teaching methods?
A: I start to use more PowerPoint slides.... I also use some teaching aids.... I try to teach less. As I’ve mentioned before, it’s meaningless to teach them more. In Physics, the basic things are always there even though everything is changing. Right here, I just want to make them clear about the basic concepts. To take an example, the LASIK technique is ever improving. So, I don’t use the old notes to teach them about it. And I tell them it’s always changing. They should learn new things if they want to develop their career in optics.

THE END
From HTM

Teacher Interview Transcript #2
Interviewee: HTM Lecturer #4
Interviewer: Winnie Tang
Interview on June 3, 2002

Q: What subjects do you teach?
A: I teach Beverage Management and Introduction to Wine in All World for Year Two students. In this class, I have 73 students both high diploma and degree. Most of them are from catering stream and some hotel stream.

Q: How do you teach these subjects? What kinds of activities do you give to your students in lectures and tutorials? And can you tell me what you expect your students to learn from these activities?
A: For Wine Studies, each week, I cover a country or a region. In the first 2 hours of the mass lecture, I mainly give them the lecture. In the 3rd hour, we do the wine tasting. So, in the first week, it's an introduction and I bought some bottles of cheap wine and then I add some sugar in one bottle, some lemon juice in another one, some vanilla in another one, and so on, so that they can try different tastes and they're able to tell the difference. They can taste Wine A which is the regular and Wine 1 which is Wine A plus a little bit of lemon. So they say, "Oh, this is lemon." They can tell by its smell and taste. In the second week, I gave them to taste wine from Bordeaux and also other European country. We get something from Chardonnay. So every time they have to taste different types of wines and write them down. Some people are invited from the industry like wine sales, some are English speaking and some are Cantonese speaking. What I want them to do at the end is not to be afraid of wine anymore and to be able to distinguish good from bad and tell the difference. In other words, to take the mystery out of the wine. At the beginning, they know nothing. At the end, they should be more comfortable. All materials are put on the website, the WebCT, so that they can download. We have a book written in English and Chinese so that they can check all the names. Wine names are quite difficult and also how to describe wine. And we have the OHT. In the mid-term, I give them a test which has multiple choice questions plus 3 blind wine tasting. I don't tell them what it is and I ask them to tell the difference. For the final exams, I allow them to go out for wine tasting. I set up many multiple choice questions because I know they're afraid of long questions. It's difficult to spell out the names. So it's very hands-on. I teach in the restaurant. We all have to sit down and taste. They can choose to swallow or split it out. For Beverage Management, it's more technical. Therefore, they have to learn from a book which is a little bit more... I give them some assignments... like I talk about cocktail so they have to make cocktails and they have to remember over 30 types of cocktails. Everybody in the class has to make one and I videotape them for them to help them practice. In another assignment, they have to go to the bar to find out the theme, how many people are working there, how they do the marketing, the cost of making cocktails, etc. I try to send them out to write something. All of them have to do the site visits. Since the students normally just look at the books and they never look outside, I force them to go outside. So, one subject is very
hands-on or "mouth-on" and another one is not like that but still I have to make sure that they have to go out and collect something. So I tell them where to get these information and I teach them to get something out of these information. Hopefully, even though they can't get anything, they remember where to find it. I hope that works.

Q: How do you check if they understand the subject or not?
A: First, I do a lot of things like bottle corks. In the Wine Studies class, every week, several students have to open a bottle of wine so that I can see what they know. For the taste thing, we try to get them to taste the wines and that's why we invite people from outside too. We make them to speak more so as a teacher he should be able to us if someone falls asleep. I show them videotapes and they can also see how the others practice. I also test them in the mid-term and the final exams, something that they can take home and write, they go to the bar and write something. As for the wine studies class there're 3 types of wines and they have to tell the difference. Very few of them can do that. They have to write down exactly what the taste is like but they still write the wrong names at the beginning. In the final exams, they have to do 75-150 multiple choice questions.

Q: Do they need to memorize a lot for your subjects?
A: Yes and no. Wine is like learning Chinese characters. We have to learn a lot of characters to write a sentence. They have to have some basic knowledge of different wines and regions. For example, they don't know where Bordeaux is so they have to remember like history. There're something they have to memorize but I focus more on making them not so afraid of wine and making them to be able to taste and go out to order a bottle of wine. In the future, when they work in the hotel they look at the wine list and they can make their own wine list. The book is always there for checking. It doesn't rely too much on memorization. There're only multiple choice questions I'm using to make sure they have read everything. So, it's yes and no.

Q: Some students commented that Wine Studies is very interesting.... You use a lot of hands-on activities and wine tasting...
A: It's a little bit like design department. They have to make the dress. They learn for years and then make one. The perfect thing would be buy the grapes, make the juice and make our own wine. And I really looking forward to that but it's a long way. Here, food and beverages are always fun. We all like to eat we all like to drink. But by doing it I give them empowerment to do it and enjoy it and then they will be the managers if they like. I try to make it fun. I think this should be fun. They've chosen the subjects. It's a little bit easier. It's boring for me to teach something boring. I'm lucky that I can teach something funny. So I can make it more interesting. Even if I teach accounting, I'd try to make it interesting instead of...it's very hard.

Q: How do you find the atmosphere of the class? Do your students participate a lot? Are they very passive in the class?
A: As the lesson goes on and they taste some wines, they become less and less passive. I try to get them to participate. Since our class is quite large, some of them chit-chat a lot in Cantonese. I try to make them listen. If I could
understand what they’re saying, it’d have made it a lot easier. But I could not.
So when I talk, I want them to listen but I give them a lot of chances to discuss
when I want them to.... They have to work in the hotel later. The hotel is a
little bit like an army. You have the uniform with the tie and your hair look
nice. When people say something, you have say, “yes, may I help you?” I
want them to learn that. So I don’t make them come in and do nothing. I still
want to have something structured. But it’s not all structured and no contents.
So, I tell them to play and to have fun.... Quite often I make them to discuss
something. If I see them sleeping. Then I say, “OK, groups of 5, to write
something out.” I make them present. So I make them to learn from one
another. So I can know what they’ve known already and add what they haven’t
known instead of acting you do nothing. Last year, I have a group of part
time students. Some of them know nothing while some of them know
everything. It depends on what department they’re working in. In one semester,
I have all full time students plus a few part time. So I try to put some part time
students in each group to learn from each other. They can learn more from
each other than from me, right? So I try to give 73 students, it’s a lot harder
than 25. It depends on the class size.

Q: I’ve done some surveys on the hotel students. Findings show that their surface
score drops significantly after one year of studying here. What’s your
comment? Can you tell me why there’s such a change?

A: A couple of things. We have 3 different streams. For Tourism, I think we get
them to do some site visits and other things. So it’s site learning. For Hotel, I
do’t know exactly what they will be doing but something in the hotel
business. For the Catering students, they may work in the hotel or in the
kitchen. So they do a lot of things with their own hands that they haven’t done
before. So you have to get more involved, you can’t just give the service. So
when you go into the restaurant, we sort of talk to the people. So that’s one
thing that we want to get them involved with their hands. Then I think in our
School, we have a lot of westerners compared with other departments. So we
want our students to be deep learners. We want them to talk back. So we push
them. Overall, most of our staff have worked in the hotel so that make us more
out-going. We don’t like them to sit down and we try to engage them more.
And I think a lot of my colleagues have done a second or third degree in
teaching and learning. So they all know they have to look at deep learning
instead of surface learning. Most staff in our department know. They’ve either
done a Master’s degree in Education. If you cook in the kitchen, the only
degree you may have done is how to cook and then you teach in the rest of
you life then you do something in teaching and learning, right? So I think
that helps. But I also think that the communication is hands-on and the
expertise in the department, either it’s mixed of westerners. In the summer,
students have to go out for their placement. After they’ve worked for one
summer, they see what they can use from what they have learned. Maybe they
start thinking differently because you push them to go the library to collect
data and there’re a lot of group works. We make them to learn in a different
way. If I have explained to you, I learn much deeper than I just go to read the
books. I’m sure that helps too.... It’s easier when you have over 150 students
to do group work so that you don’t have to collect 150 papers. I still try to ask
them to do individual work because I want to know what everybody is doing.
But if the class is too big, it's quite impossible. But they say there're advantages and disadvantages. If you can nothing in the group, you can have an A by doing nothing. But then you can learn from each other. If it's an individual work, you can know everybody has learned something. But then they don't know how to do group works.

Q: Is the final exams weighing 70% of the total mark?
A: It's 60% for coursework and 40% for the final exams.... Like one semester, I did like 50 points for the mid-term and 10 points for some assignments, that makes 60 for the coursework, plus 40 for the final. In the second semester, I did 40% mid-term and 20% for homework and 40% for the final.

Q: So, how much does the project weigh?
A: For the Beverage Management class, it's 40%. They have to go to the bar and interview the owner to find out for example the Mexican theme, how they carry out the theme, how they create the atmosphere and make the food and drinks so they need to look at the service style and get the recipe, etc. So they have to go out for 2 or 3 times to get this information. They have to write it out as a few references.

Q: Which assessments do you think students can get most from your subjects?
A: Well, to benefit them the most is to ask them to do what I'm teaching them. If I teach them how to make cocktails how to run a bar, the best thing is to say "the bar is for you tonight. You do and then I supervise. Then you have half of these 70 students." Jacky has tried in his elective where in the final exams everybody has to cook something. They pick out something and they make some food. That's a real testing. If they do it on the paper, they can write a lot more than you do. But it's not always possible. I ask them to do multiple choice questions because it is their second language. And if I give them short or long questions, they just blah-blah-blah. If I want them to tell me how to serve a table, then they say "the carpet is great and then blah-blah-blah". That's not what I'm asking. But that's 50% of the exams. So, if I give them 150 multiple choice questions, I cover everything and I can see which parts they understand and which one they don't. Questions 1 to 10 cover everything in Chapter one. If all students do these 10 questions very poorly, then I know nobody understand Chapter one. So I can check back. If it's essay question, it's quite hard to mark. Their English level is so poor that they don't get the French wine names correct. So I think multiple choice questions work and it's easy for me to put them into the computer. I don't have to spend hours marking. Both of us have the advantages, right?

Q: Do you enjoy teaching these 2 subjects?
A: Yes. I've been very lucky. For 9 years, I've been teaching all subjects that I know how to do in the hotels. Before I came here, I worked in a local hotel. I worked in a hotel and ran a restaurant. I have a lot of teaching experience.... So I was in the hotel and somebody else in the kitchen. Quite often, 5 different groups I do one class with somebody to make sure everybody is the same. That can be very frustrating. They want to teach more and some of them don't want to do that. We have to be fair to all the groups. Now I have groups all by myself. If I want to take them to 10 visits or 1 visit, nobody would get jealous.
So for the Beverage Management class, I take them to the Shangri-la and show them different bars so that they get something to see. And I force them to go to somewhere else. But if I don’t enjoy, I won’t do that. And I’ve got to say because most of the credit-bearing system we can offer more electives. If nobody choose it, I have to teach all boring subjects five years ago. I’ve been very lucky that I have been assigned to all electives. We have a new course using new system and new curriculum that we have no paper work. I prepare the xxx for class next year and the entrepreneurship. I have to develop them from scratch so that I can design myself. I’m not saying this is what you do and this is the recipe. I say I want to make a chocolate cake and you can use any recipe you want. It will be very interesting. And the group size is not as big as used to be. I mean I have fun and I think all students always come to class. Maybe they can drink something or have a happy hour. And my SFQ looks OK. Not bad at all. I’m not a perfect teacher but I think students have fun, and that is very important.... If you’re a child and your mother hits your head. Later you will hit your children even though you don’t want to. It’s very hard to change, right? If you teach Physics and you tell them to do this and do this. Our staff have worked in the hotel they know that by showing by explaining you go much farther doing this and this. So they’re different teachers. So, the subjects are easier to teach. It’s much more service-oriented. We all have to be service-oriented so we teach. And we’re more service-oriented to our students. We’re much more accommodating. For Physics, everything is black and white. For us, the customer isn’t happy but...he’s fighting for his right. Maybe it’s not the food but it’s the wine. For you it’s bad but for me it’s good. So, it’s no black and white. No right nor wrong. In marketing or cooking, nothing is black or white. It’s all gray and different shades of gray. So, that’s much harder I think.... If they can’t explain that if you know this and that you can do something, it’s easier to learn. I feel that in Hong Kong students are pushed to learn but they don’t know why. Then you will become a stupid learner, you keep on learning and learning but you don’t understand. It’s different if you understand why they told you this. But it takes too long....

THE END
## APPENDIX VI: Student codes in interviews

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